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One of a series of productivity primers examining the interrelationship among vocational education, productivity, and economic development, this volume consists of seven occasional papers on economic development and productivity. Included in the collection are the following papers: "The Real Supply-Side Economics," by Anthony P. Carnevale; "Reindustrialization and Vocational Education," by Amitai Etzioni; "Vocational Education and Reindustrialization," by Rupert E. Evans; "Work, Employment, and the New Economics," by Melvin Feldman; "Vocational Education as a Participant in the Economic Development Enterprise: Policy Options for the Decade Ahead," by Leonard A. Lecht; "The Reindustrialization of the United States: Implications for Vocational Education Research and Development," by Herbert E. Striner; and "Improving Productivity in the Work Force: Implications for Research and Development in Vocational Education," by Dennis J. Sullivan. (MN)

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ED226154

Special Publication Series No. 35

PRODUCTIVITY PRIMER

BOOK 5

A COLLECTION OF OCCASIONAL PAPERS ON ECONOMIC DEVELOPMENT AND PRODUCTIVITY

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1982

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TABLE OF CONTENTS

Anthony P. Carnevale
The Real Supply-Side Economics 1

Amitai Etzioni
Rindustrialization and Vocational Education 13

Rupert E.Evans
Vocational Education and Reindustrialization 19

Melvin Feldman
Work, Employment, and the New Economics 33

Leonard A. Lecht
Vocational Education As a Participant
in the Economic Development Enterprise:
Policy Options for the Decade Ahead 49

Herbert E. Striner
The Rindustrialization of the United States:
Implications for Vocational Education
Research and Development 67

Dennis J. Sullivan
Improving Productivity in the Work Force:
Implications for Research and Development
in Vocational Education 85

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THE REAL SUPPLY-SIDE ECONOMICS

I am here today to talk to you about economics. When I say "economics," chances are that your thoughts flash back to some college instructor who bored you to death with an econometric world that really did not resemble the world of flesh and bone in which you lived.

Well, you may rest easy. I am not going to talk to you about the latest econometric mousetrap. Instead, I am going to talk to you about an economic debate much closer to your hearts—an economic debate whose outcome will largely determine the size and character of the American education, employment, and training system in the foreseeable future.

The debate focuses on alternative approaches for remedying our current economic malaise. On the one hand are the "demand managers" and the "simple supply-siders." The economic policies of both the demand managers and the simple supply-siders are flawed by their reliance on narrow, nationwide policies of stimulus and restraint. The only important difference between the demand managers and the simple supply-siders is that the simple supply-siders favor stimulative measures that channel additional income toward people who are likely to be savers and investors, while the demand managers take a more indirect route. They prefer stimulative measures that channel income toward consumers.

The methods for demand managers and supply-siders are the same. Stimulative economic policies are limited to nationwide tax cuts and discretionary money. Occasionally, spending increases are encouraged for stimulative purposes, but these increases are indiscriminate. For the demand managers and simple supply-siders, it is the *overall* level of spending that is important for economic policy—the way in which this money is spent is not crucial.

Antiinflationary policies of restraint are limited to "tight" money and attempts to hold down or cut spending. To the demand manager and the simple supply-sider, it matters little which programs are restrained or cut so long as the aggregate increase in spending is reduced. It is to be reduced to cool inflation and increased to prime growth.

What should concern you most is that demand managers and simple supply-siders, in their allegiance to generalized fiscal and monetary policies, seem to agree that the only economic role possible for public education, employment, training, and social service institutions is, at best, as a "safety net" to maintain those who do not share in the largesse of the American economy. In the worst situations, these systems serve as budgetary cannon fodder in the war against inflation.

Alternatively, the *real* supply-side economists recognize the necessity for an education, training, and social services infrastructure to develop human capital into a productive and mobile work force. The real supply-siders know that, as a matter of course, we must improve the productive quality of the American work force, expedite its continuous integration with applied technologies, and increase the rapidity with which we respond to the relative changes in price between labor costs and other factors of production. It follows that the real supply-siders recognize the necessity for education, training, and retraining if we are to attain consistent growth and stable prices.

In my view the future of vocational education, indeed the future of the American economy, lies with the real supply-side economics. What I hope to do in this talk is to give you a perspective beyond the current battle of the budget, and to look at new demands that will surely be made on you as "simple supply-side economics" gives way to the more urgent realities of the current economic malaise.

Let me begin with some general remarks as to where our economy has been, and where it is today.

The Historical Roots to Our Current Economic Malaise

The Second World War marked the United States' first great economic leap forward. Gradually, a new social optimism was born from this economic success. The hothouse economy of the postwar increase in productivity made it seem as if we could produce enough materials goods to drown social problems in a sea of resources. Social conflict, and the ideologies that fed upon it, would be abolished forever. Our principle problem as we ran pell mell towards the postindustrial society was to provide for meaningful leisure-time activities.

Without repeating the familiar litany of decline, suffice it to say that things have changed for the worse since the forties. Our current concerns are not misplaced. We are finally beginning to react to economic decline. After ignoring our industrial base and presuming our economic invulnerability, Americans have been jolted into the realization that we must attend to the care and feeding of our economy. America's basic economic problems are no longer the exclusive province of wide-eyed futurists and academic economists. We were all warned of the impending economic crisis, but it was only when the Arab oil embargo convulsed us into gas lines and an 18 percent rate of inflation that each of us wondered if this first mild economic stroke was not the harbinger of something worse.

It is commonly explained that our current economic malaise is little more than the evidence of our inevitable adjustment to changing circumstances in the international economy. Descriptive explanations of our current economic status, however, beg the question. The real question is how, with our massive economic lead, abundance of natural resources, and trained work force, did we lose our economic preeminence in the world? The answer, in my view, is that our economy has not been able to adapt as quickly as the economies of our competitors to the opportunities for production appropriate to an advanced industrial economy. That failure begins with our wornout domestic economic organization, or with the realities of modern-day international competition.

It is my view that our current insistence on wornout policies was firmly established by our dramatic successes of the past forty years. The snake in our garden of successes has been success itself. Experience taught us facile and aloof economic policies that encouraged ignorance of the actual engine of economic growth. An important cog in that engine is the self-conscious development of a productive work force.

In the late forties, the abundance of resources organized for war production remained stimulated during the postwar era by the pent-up demand for consumer goods that war wages provided. The result has been forty years of relatively effortless growth. As a result, our economic policies have been limited to broad-gauged fiscal and monetary interventions necessary to manage growth. There has been no need for a broader and more articulate set of policies to promote production. We have been allowed to largely ignore resource mobilization, the development of human and machine capital, and the process of production itself. Instead, we have remotely and neutrally leveraged the mobilization of resources and the application of technology through the management of demand.

To oversimplify the situation somewhat, we have stimulated economic growth and tempered inflation by moderating the amount of income available for spending. Spending, translated into the demand for goods and services, stimulated production. Production generated employment and wages available for more spending—which created more production and more wages. If this self-sustaining, upward spiral of economic growth was not moving fast enough, we nedged it with broadly based stimuli—usually in the form of tax cuts. If the spiral spurred upward too quickly, we slowed economic growth and the rate of inflation by bleeding money out of the economy until production and income growth achieved some rough balance.

Income growth also resulted in increased public revenues that had to be spent so they would not act as a fiscal drag on the economy. However, fiscal drag proved to be a happy problem. We tended to use public revenues to maintain or compensate those who, for one reason or another, did not share in the economy's largesse. Government policies, especially federal policies, evolved as arbiters of economic equity—not as vehicles for the promotion of human capital development or economic efficiency. Public revenues could be used to paper over the social failures of production and to pay for its negative external effects.

Our economic system seemed to have the self-sustaining power and perfection of a social gyro. Once set in motion, it spun freely at ever-accelerating rates. Production generated income, which in turn encouraged production. All that economic policy had to do was to brake or nudge this spinning wheel. Moreover, public interventions such as vocational education, Job Corps, or economic development efforts, largely found in schools or public agencies, could be neutral and remote from production itself. These public sector economic levers braked or nudged the free-spinning economic wheel externally at the point of demand. Economic policies for the general development of human capital, resource management, and the integration of labor and new technologies were unnecessary.

Our past policies are no longer appropriate. They are not responsive to the complexity of our nation's economic problems. They are not compatible with the current organization of our national and international economies. Demand management and its distant cousin, "simple supply-side economics," fall into a "macroeconomic policy trap." The trap consists of an overreliance on broad, nationwide fiscal and monetary policies. The result is an unavoidable vacillation between restrictive and stimulatory policies. Restrictive policies end prematurely when they create intolerable unemployment and unconscionable interest rates. Subsequent stimulatory policies end prematurely when they result in an astronomical rate of inflation. Neither the restraints nor the stimuli ever achieve their desired effects. The trap closes as a persistently high rate of inflation reduces the allowable stimulus, and as economic stagnation makes aggressive restraint unwise. Because of this trap, neither effective stimulus nor restraint is possible.

Stagflation, a combination of stagnant growth and inflation, is the elusive quarry that draws us into that trap. This hybrid calamity is the new test for economic policy. We no longer face the luxury of single-minded assaults on either inflation or stagnant growth. A single-minded, broad-based stimulus is inevitably inflationary because its seeds fall equally on fertile and infertile fields. A single-minded, broad-based restraint frustrates possibilities for productive growth as much as it curbs inflation.

Today, our national and international economies are less responsive to traditional macroeconomic policy tools. The free-flowing international marketplace has long since been replaced by a system of government-to-government trade patterns and the aggressive intervention of multinational corporations that dwarf most governments in size and power. Scarcity in natural resources, the need for new product markets in developed nations, and the new independence of resource-rich, underdeveloped countries can only accelerate that trend.

At home, the "invisible hand of the marketplace" has been slowed by the "invisible handshake." Economic decisions are determined by a complex set of relationships and expectations between firms, workers, and customers. As a result, wage, price, and production decisions are becoming increasingly independent of overall economic conditions.

The effect of this complex economic reality is evident in the intransigence of the current inflation rate in the face of traditional monetary and fiscal restraint. We reduce demand, but wage and price decisions are increasingly independent of overall demand conditions. The mutual trust and loyalty between firms, their workers, and their customers (not to mention the cost of finding and training workers and cultivating customers) make firms loathe to disrupt expected patterns in wages and prices. Other factors such as multiyear wage contracts, wage and price indexing, fixed percent pricing, and the publicly provided social safety nets further reduce the leverage in traditional demand restraint.

The intransigence of the current inflation rate in light of traditional economic restraints is evident in the increasing economic and social costs enacted for marginal reductions in wages and prices. The social and economic costs of our policy-induced recessions weaken our resolve to continue an aggressive restraint long before the desired antiinflationary effect is achieved.

Eventually, the single-minded emphasis on overall fiscal and monetary restraint fails. The effects of such policies overwhelm the nation's social and economic capacity to pay for them. At some point, policies move abruptly from aggressive restraint to emergency stimulus. The government inevitably falls into a pattern of stop/go policies that are disruptive of consumer and investor confidence.

The Effect of Current Antiinflationary Policies on Human Capital

Our current antiinflationary policies are especially destructive of human capital development.

The cost of wages constitutes more than half of the nation's annual economic activity. Because of the importance of wages in economic activity and the sheer visibility of wage decisions, antiinflationary strategies have historically tended to concentrate on reducing wage increases as an indirect means of reducing prices. We attempt to reduce wages by encouraging slack labor markets through generalized economic restraints. But these restraints are merely a euphemism for budget cuts and tight money in the interest of encouraging unemployment.

In the wake of the failure of public efforts to increase employment and in the face of mounting evidence that wage and price decisions have little to do with overall economic conditions, it appears that we are using *people* as common fodder in the war against inflation. It also appears that we are using them to no avail. The current reliance on restrictive demand policies encourages unemployment in the short term, and discourages investment in the work force in the long term. Alternatively stated, our current policies have a "double negative" effect on the quantity of jobs and the quality of the work force.

Unemployment is bad politics. It is an even worse economic policy. The losses in human capital (and eventually, in economic productivity) are mammoth. Current estimates suggest that as much as 30 percent of our current, precipitous drop in productivity results from underemployment and unemployment of human capital. In order to reduce inflation by 1 percent, we must throw one million people out of work for three years. Moreover, maintaining even one million unemployed people costs as much as $25 billion in federal budget deficits for a single year—roughly $10 billion in various support payments and $15 billion in lost revenues.

The psychological impact of unemployment has its economic costs as well. The negative economic expectations derived from high unemployment are every bit as powerful as those that result from expected inflation. Where unemployment is high, so is economic insecurity. Few people take risks when they live on the ragged edge of economic necessity. High unemployment discourages self-initiated improvement in skills and training because an immediate economic payoff is not apparent. Alternatively, the economic security that comes with an almost fully employed economy provides longer planning horizons for both individuals and economic institutions. Security encourages people to take risks. Security builds trust in economic futures.

Trust and confidence in the economic future is built with the measure of choice and opportunity that high levels of employment provide. It is of inestimable economic value. The Japanese and some of our other competitors are willing to subsidize export prices in order to ensure full employment at home because they know the economic value of the longer-term investment horizon, for both labor and capital, that full employment allows.

The current public debate over the level of unemployment necessary to fight inflation is also being fueled by a consideration of the losses in national economic output that are occasioned by the persistent and high levels of unemployment. Such high levels of unemployment have characterized the American economy for the past several years. According to the late Arthur Okun, for instance, our current antiinflationary policies cost $200 billion in lost output for every single percentage reduction in inflation. Professor Steven Sheffrin calculates that the failure of the American economy to sustain an unemployment rate equal to the 4.1 percent attained in the Eisenhower years has cost the nation more than $2.3 trillion in lost output.

The dynamics of fiscal restraint in the form of budget stringency is especially destructive of human capital. In order to reduce inflation one-tenth of 1 percent, for instance, we must eliminate some $15 billion in federal spending. These spending cuts inevitably fall on what little human capital development monies there are in the federal budget. The federal budget—at roughly $600 billion plus—seems huge; but in reality, there is little room for cuts. Fifty percent of the budget is for income maintenance programs such as Social Security, unemployment compensation, retirement benefits, and similar programs that have grown almost uncontrollably with the relaxation of eligibility requirements. Seventy-five percent of this fifty percent figure is for Social Security and Medicare expenses only. These benefits are mandated by law and are difficult to cut. While these programs provide resources to maintain individuals, they provide little in the way of human capital development. Another quarter of the budget goes to the military. Theoretically, that money is perfectly cuttable; but in the practical politics of Congress, military spending is and will continue to be a sacred cow.

The remaining 25 percent includes virtually all state and local aid, in the form of education, employment, social services, and economic development spending. Budget cuts inevitably focus on this final quarter of the federal budget—to the detriment of human capital development.

What is worse is that no one really believes that balancing the federal budget will have a direct, beneficial effect on the rate of inflation. In fact, even proponents of this strategy will agree that the current proposal to cut $40 to $45 billion from federal spending will, at best, reduce inflation by three-tenths of 1 percent. Common sense tells almost everyone that cutting $30-$45 billion from the federal budget will not change the course of a $2.7 trillion economy. Tails do not wag dogs, even in economic theory.

The federal deficit has very little to do with inflation; even Milton Friedman has conceded this point. The current deficit is about 2 percent of the Gross National Product (GNP). In 1976, when inflation was about half the current rate, the deficit was twice its current size. Nor is the national debt the culprit where inflation is concerned. The national debt has not grown as a percentage of the GNP. At $1 trillion, it is roughly 57 percent of the current GNP. In 1960, the debt was only $290 billion, yet it constituted 57 percent of that year's GNP of $506 billion.

We are caught in a vicious circle in our attempts to control inflation. Depressed demand, in the interest of price stability, atrophies our basic productive capacity and encourages the upward creep in the noninflationary (and therefore immutable) rate of unemployment. That rate, the rate of unemployment at full employment, is now nearly 6.0 percent. As our human and physical resources wane, output declines further and unemployment rises. Panicked attempts at increasing employment through tax cuts and other general stimuli only result in further inflation as increased spending power falls equally on growing and stagnant industries.

I do not mean to imply that national budgetary stringency is unimportant. Federal borrowing crowds out private borrowing. I would like to say, however, that our narrow reliance on budgetary stringency as a principle tool for antiinflationary fiscal restraint has led to "meat axe" budget cutting that results in illusory budget savings.

We all need to be reminded that it is not the budget that drives the economy, but the economy that drives the budget. For instance, every 1 percent increase in unemployment adds $27 billion to the federal deficit and every 1 percent in interest rate increase adds $15 billion to the deficit. In the long run we will realize our budgetary goals only if we are successful in expanding our nation's economic capacity.

It is shortsighted to reduce commitments to programs, such as vocational education, that can have a positive effect on the nation's productivity and growth possibilities. Short-term economies in our investment in a productive work force are illusory. I carry no brief for current programs or their concentration in the public sector. Programs may justifiably disappear, but the problems they were intended to address will not. The alternative to the promotion of employability among the disadvantaged is greater public dependency and even higher income maintenance costs. The alternative to policies that provide retraining and relocation of experienced workers is a vigorous protectionism and a waste of our experienced workers.

Budgetary stringency is good economic management. But the current, indiscriminate budget cutting, with its disregard for the potential economic worth of individual programs, is not our answer. A plan of more moderate budgetary stringency would be more sensible. A deliberate and persistent budget strategy would scrutinize every program and tax expenditure for their effect on productivity and prices. Those such as vocational education, which have a potential for encouraging productivity and price stability, should be spared the budget cutters' axe.

The Real Supply-Side Economics

If we are to escape the self-destructive economic policy trap, with its characteristic, indiscriminate reliance on generalized policies of restraint and stimulus, we must broaden the scope of economic policy. The hallmark of a successful economic game plan is a reduced reliance on traditional monetary and fiscal policies—supplemented by a broad array of new supply-side policy levers.

To reiterate, the only important difference between the demand managers and the simple supply-siders is that the simple supply-siders favor stimulative measures that channel additional income toward likely savers and investors. Demand managers tend to channel stimuli toward consumers.

Their methods are the same. Stimulative economic policies are limited to nationwide tax cuts and discretionary money. Occasionally, spending increases are encouraged for stimulative purposes, but those increases are indiscriminate. It is the overall level of spending that is important for economic policy—the way in which the money is spent is not critical. Restraint is limited to tight money and attempts to hold down or cut spending.

To the demand manager and the simple supply-sider, it matters little which programs are restrained or cut so long as the aggregate increase in spending is reduced. It is to be reduced to cool inflation and increased to prime growth.

A reduced reliance on nationwide monetary and fiscal measures, supplemented by additional supply-side policies that target restraint on inflationary economic activities and stimulus on possible productive growth, allows the nation to pursue competing economic goals of inflationary restraint and growth simultaneously. Moreover, such a tactic would allow for more moderate (and thereby attainable) monetary and fiscal policy targets, putting an end to the restrictive stop/go policies of the past.

An expanded supply-side policy will require increased priority for programs such as vocational education that can have beneficent effects on productivity and price stability. New supply-side policies will also require other changes, including a reformulation of current programs and policies to reflect a more careful balance between economic and social purposes, a shift in the current top-down nationwide perspective in our economic policies toward a perspective that encourages bottom-up subnational economic development consistent with the geographic diversity in the nation's economic base, new policies targeted on the price and wage structures of individual economic sectors, and new cooperative arrangements among government, business, and labor.

The Quantity of Work and the Quality of the Work Force:
The Importance of Human Capital

As we move toward more articulate supply-side policies, programs that emphasize the development of human capital should become more important. The current deliberations in the Congress ignore human capital in favor of tax incentives for an increased supply of machine capital. In our rush to ensure a steady supply of applied technology and machinery, we ignore human capital. We do so at our peril.

The evidence that we have ignored and continue to ignore the economic importance of human capital is compelling. One striking bit of evidence is the dramatic rise in corporate expense for educational remediation and training. Recently, the Conference Board, a respected private sector association of Fortune 500 companies, reported that 35 percent of the firms it studies now provide significant remedial training in reading, writing, and arithmetic. Some put the cost at $20 billion. More general evidence of our neglect is available in an analysis of the composition of our recent growth in employment.

Between 1973 and 1979, about 13 million new nonagricultural jobs were added to the American economy: a remarkable achievement that far outstrips any of our competitors. Many take comfort in this fact as the final proof of the health of the American economic system. I do not. What disturbs me is that the growth was concentrated in low-wage and labor-intensive jobs. These jobs offer short hours (generally less than thirty hours a week), low wages (usually minimum wage), and tend to be dead-end jobs. What is most disturbing is that these jobs tend to be concentrated among women and new entrants to the labor market: the people upon whom our future productivity depends. In summary, most of the growth in the American economy is leading toward an economic structure characterized by poorly paid and unproductive work.

We have arrived at a point where neither the quantity of available work nor the quality of the work force is sufficient. While the disappointing overall growth in the American economy encourages unemployment and low-skill/low-wage work, shortages in high-skill/high-wage jobs mount. The federal government's proposed synthetic fuels program, for instance, originally assumed production levels that would have required fully half the available engineering and professional labor pool in that industry. According to the National Tooling and Machinery Association, we currently lack about 60,000 skilled machinists. If present trends continue, the shortage will mount to 250,000 by 1985. These shortages persist in spite of the fact that machinists can make annual salaries of $30,000 or more.

Massive new public commitments to defense and energy production are likely to result in further shortages of skilled labor and consequent inflationary bottlenecks in production. We are currently planning a surge in defense production three times that necessary to fight the Vietnam War—and we intend to spend the money in roughly the same time span. In addition to policies to ensure the availability of a skilled work force for military and energy production, we will need to cater carefully to the skill requirements of civilian industry lest it become starved for skilled workers and capital. A second-rate economic power cannot afford a worldwide military presence.

The gap between available skilled jobs and skilled workers is already evident. We see more and more statistics that demonstrate severe skill shortages among American workers. In a statement to the press on March 16, 1981, the President noted that he had found thirty-three and one-half pages of want ads in the Sunday, March 15 *Washington Post*. A close analysis reveals that at least 1,900 of the advertised jobs required some specialized, institutional training. Approximately 85 percent required institutional training of one year or more.

The most disturbing evidence of the problem comes from a series of studies which suggest that our failing competitive advantage in foreign markets is due to our short-sighted government policies. Recently, the Bureau of International Labor Affairs in the U.S. Department of Labor reported that the decline in United States trade performance since the 1960s is the result of differences in the growth of net real investment in equipment and in the acquisition of labor skills through education and training. Between 1963 and 1975, the United States' share of the world's skilled workers fell from 29 percent to 26 percent. We have dropped from second to seventh in the measured "skilled endowments" of our workers. The result of this ominous trend is that the skill content of American imports increases while American exports steadily lose their competitive advantage.

In light of accelerating economic changes, our tendency to ignore the economic importance of vocational training will cost us dearly in the future. The coming decades will see rapid industrial change as national competitive advantages sort themselves out in an increasingly competitive world economy. Highly skilled labor and highly productive industries will increasingly concentrate in industrialized nations. Unskilled labor and unproductive industries will concentrate in those developing nations that substitute labor-intensive production for technology in their first steps up the developmental ladder.

Competition for highly skilled labor and highly productive industries will increase among industrialized nations. That competition is accelerating right now. We will maintain our international economic preeminence only if we learn to continuously integrate new capital and labor to produce new products with newer, more efficient methods.

If we are to succeed, national economic policy must recognize labor as an economic resource to be developed and continuously refined.

A rapidly shifting industrial base and accelerating international competition will increase the need for occupational and geographic mobility in the nation's labor. Both will be more difficult as the labor force ages. Nothing threatens growth more than the proliferation of defensive "protectionist" measures that protect workers from structural changes. In order to avoid protectionism, we need a long-term commitment to continuous skill upgrading and education and training for all workers. The primary tools for such a policy already exist. They must be expanded and consolidated into a comprehensive policy with much greater involvement and cooperation from private industry and labor.

The Shift to Human Capital:
From Redistributive to Developmental Strategies

A new economic role for human resource development, including vocational education as an important contributor, will not come without a careful reformulation of current policies. Our current policies and programs were crafted in an era of effortless growth. Current public programs were crafted in an environment when the essential economic and political issue was the equitable distribution of a growing economic pie. Policies and programs were designed to allow able-bodied workers an equal opportunity to partake of the largesse that growth provided, and to maintain those who could not fully participate in the nation's economy. Human resource policies were focused on production. They presumed a competitive and successful private sector.

Effortless growth no longer prevails. The dominant economic issue has shifted from the distribution of a growing economic pie to growth itself. Human resource policies that focus exclusively on the distribution of the economy's largesse and income maintenance are no longer appropriate. Instead, there is a shift in emphasis to developmental policies that emphasize the use of human capital as a productive resource.

Programs such as vocational education, the stepchildren of the "War on Poverty," assume a new importance. Vocational education's ties to the private sector and its concern with the general productivity of the labor force (especially prior to amendments in 1968), encourage its sudden preeminence among human resource programs.

The realization of that preeminence will not come without change. Federal dollars, for instance, are likely to shift from general programs to more targeted economic purposes. Already there are rumblings to use current federal dollars for a Vocational Education Opportunity Grant—a VEOG, if you will. There is additional pressure to attach vocational funds to industrial policies for high technology and other industries. There are additional proposals to close the new U.S. Department of Education and move all educational involvement into the Departments of Labor and Commerce.

There are more than political currents at work. The demography of labor markets will demand change. As the members of the baby boom age and the incentives for early retirement recede, vocational education's clientele will age. If fertility rates hold steady or decline, more clients will be female. More directed job training and more retraining of the work force will be required. The complexity of career decisions made by adults will require more sophistication and supportive services. Moreover, it is likely that these services will be delivered in environments further removed from the traditional classroom and closer in concept and actual physical location to the world of work

From National to Subnational Economic Development

If supply-side policies are to succeed, they must also be more decentralized in their application. New policies, if they are to be effective, will devolve from a national to a subnational policy focus. Earlier, I explained that our current national policies fail in part because they do not satisfy the industrial and geographic variability that underlays the so-called "national economy." As a result, the stimuli contained in these national economic policies fall equally on fertile and infertile economic fields—simultaneously giving us growth from productive sectors and inflation where growth possibilities do not exist. Similarly, economic restraints cool *overheated* economic enterprises, but simultaneously stymie growth in industries where growth is possible.

A reduced reliance on broad-gauged economic policies, supplemented with more articulate policies that are targeted separately on stimulus and restraint, will bring some relief from the current situation of stagnancy and inflation—a situation that present policies encourage.

Current proposed national industrial policies are a step, but only a step, in the right direction. "Picking winners" on the basis of national industrial performance ignores the geographic heterogeneity that is characteristic of individual industries (i.e., an industry may be doing badly nationally, but may be doing well in some specific locale, and vice versa).

The fundamental flaw in such proposals is that they continue the top-down perspective of current policies. The national economy is a statistical creation. It exists largely in the computer banks of federal statistical agencies and in the econometric niceties of the major economic models. It is a useful tool for descriptive and predictive purposes, but it is overused as a rubric for policy. It has no flesh and bone. Economic growth does not proceed from the top fown; it begins with infinitesimal sympathetic uses of labor, capital, and resources, and proceeds from the bottom up.

The real supply-side economics would encourage an increased capacity for bottom-up, subnational economic development. The dim outlines of subnational economic development systems exist in many places, born of inter- and intra-area competition. Vocational education is already a companion to many of those systems. Where it has not already done so, it should assume its proper responsibilities in local and area development.

The federal government has much to learn from these efforts in its own attempt at national policies. At a minimum, federal policies should not set asunder what local self-interest has joined. Instead of discouraging the national arrangements that are evolving in many areas, the federal government should attempt policies and programs that allow their nascent systems a perspective beyond the inter-area economic competition that gave rise to them. In vocational education or in other areas, the federal government should supply encouragement, information, dissemination of research on best practices, and should encourage linkages and complementarity in federal programs.

Cooperation

The keystone to the success of an expanded supply-side policy is in increased cooperation among government, business, and labor concerns. Our history of effortless growth has organized us into adversarial groups for the purpose of distributing the growth dividend. A society organized for distribution is inimical to growth. Economic production is a cooperative venture by its very nature.

The success of vocational education as an economic policy will rest on its ability to cooperate with its sister institutions in the public sector: the employment services, CETA, the private industry councils, and others. Its ability to move closer to private sector training will be equally important. This is especially true as the vocational education client increasingly becomes an adult with prior work experience.

The relationship between vocational education and private training is already strong when compared to its public cousins. It needs to be stronger. The substantive and physical distance between public and private training should be reduced. Neither will replace the other. Private training follows the short-term boom and bust of the business cycle, while public training can afford a longer and more persistent view. Public training maintains the constant quality of the labor force when the business cycle discourages private investments in human capital.

In addition, closer cooperation can be of mutual benefit. Public and private entities can share personnel, equipment, capital, and facilities. National policies to expand allowable tax expenditures for the transfer of instructors, updated equipment, and for mixed public and private teaching facilities are currently under consideration.

One can agree or disagree with much of what is heard at this conference. Your head may buzz with ambiguous new phrases that you have heard from me and from others. Some of them may occasionally stumble sideways out of your own mouth: supply-side economics, subnational economic development, economic revitalization, reindustrialization. The aftertaste of such phrases tells each of us different things. Our analytic bent recognizes an attempt at corralling a new mix of ideas. The politician in all of us knows a fast train when he or she sees one. Some will catch the train before it leaves the station. Some will choose to wait for a wreck. But the buzz of artful phrases does signal one common theme. That theme is change. It is the business of institutions such as the National Center for Research in Vocational Education to absorb the shock of change for the vocational education community—to separate wheat and chaff—to sort the sense and nonsense. I offer my remarks as more grist for your milling.

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REINDUSTRIALIZATION AND VOCATIONAL EDUCATION

For America to sustain a high standard of living and set aside the resources needed for national security, at least a decade of shoring up productive capacity is required. In essence, we are in need of a period of reindustrialization.

The American society has been underdeveloping. Decades of overconsumption and underinvestment in the national economic machine have weakened America's productive capacity. The American industrial machine, with some important exceptions, is now run like the steel mills; where increases in labor settlements and dividend payouts vastly exceed increases in productivity. Coupled with relatively low investments in new plants, equipment, and research and development, as well as other factors, these strategies have resulted in an aging technology and an inability to compete with countries such as Japan and West Germany that rebuilt their plants after World War II.

In the face of a deteriorating infrastructure and capital goods base, a continued high level of consumption leads to an acceleration in the rate at which these resources are used up. A comparison could be made to a university endowment that is used up rapidly once expenditures exceed the income. This is what happened during our period of mass consumption. There was not enough plowed back into the underlying sectors (the infrastructure and capital goods sectors) to maintain and update them. In that sense, consumption was "excessive."

The terms "reindustrialization," "industrial policy," "revitalization," and "supply-side economics" are thrown around in the economic world at fast clip; sometimes as synonyms, sometimes as antonyms, and sometimes as both in the same breath. Under the title "Re-industrialization's Poor Record," a British executive, R. U. Grierson, attacks "industrial revitalization" on the basis of Britain's and others' bad experience in lavishing support on lame duck industries—a practice that represents a typical failing of "industrial policy." Joel S. Hirschhorn, of the U.S. Office of Technology Assessment, believes that to "reindustrialize America" a national industrial policy along the lines of the Marshall Plan is required. And so it goes.

The quest for some measure of semantic order, for making definitions and sticking to them, is not a pedantic expression of an academician's need for tidiness. It is a matter of fixing labels long enough to tell what is in each bottle and the differences among them. I will turn to a modest classification of these labels shortly, but first I must account for the issue the terms attempt to clarify.

At the core of the current discussion of economic policy are competing conceptions of both what ails the economy and what prescriptions are called for. Advocates of all the varying positions despair, albeit to differing degrees, of the conventional econometric models and Keynesian theories, and policies based on them. All agree that something more is amiss in the American economy than an unduly high reading on some economic indicators, such as inflation, unemployment, productivity growth, and savings. The problem is more severe than just another downturn of the age-old business cycle, soon to swing up again. All concur that this is not merely or even mainly a demand-driven (or OPEC-caused) inflation, to be curbed if not cured by trading x points of employment for y points of inflation. All agree that the foundation of the American economy has weakened and needs shoring up. There is not one counter-culture, no-growth advocate in the entire group.

Differing views of our economy are best seen as divergent conceptions concerning what the proper relations between the polity and the economy are, and where the levers for corrective measures lie. The positions taken do not directly parallel those taken by public officials, political parties, or the conservative-liberal dichotomy. They may be arranged, for convenience of presentation, on a continuum from radical conservative to moderate centrist to left liberal.

At the radical conservative end of the spectrum is the well-known position that what ails the economy is mainly an excessive level of politicization. This is reflected not only in an unduly high proportion of the GNP being used and allocated by the polity and excessive regulation of private decisions, but also in the revolution of entitlements, and attempts to deal with all social and many personal needs via the polity rather than the market. Economists Daniel Bell and Irving Kristol have articulated this position, as has Milton Friedman.

In this case, the remedy is to reduce the scope and intensity of the polity as much as possible; by releasing resources to the private sector, deregulating industry, and letting the market do its own wondrous things. Arthur Laffer and Kemp-Roth are the most radical of this school of thought; they hold that the revenue lost via monumental tax cuts will be restored by the higher tax yield of a more productive economy. Other radical conservatives, such as Milton Friedman, are satisfied to cut back government expenditures and taxation drastically, without assuming a *proportionate* gain in the economy and tax revenues.

In terms of the radical-conservative stance, *where the levers for change are,* this approach is wholly nontargeted. It sees no need to direct, aim, or guide the public resources released to the private sector in any particular way. Indeed, *freeing* them to go wherever the market will take them is the kernel of the approach. This viewpoint is generally termed "supply-side economics," since it calls for letting private demand work its own way. The private economy responds to it by altering its capacity to supply what the demand seeks.

At the other end of the spectrum of positions, in the left-liberal category, is the notion that the polity's role should be intensified rather than reduced. Here the diagnosis is that in comparison with other highly successful economies (especially West Germany and Japan), American institutions provide insufficient guidance and support for the private economy. The market, it is implied or stated, has shown its inability to invest enough in new plants and equipment, to innovate and compete. Executives have grown risk-shy and dividend-happy. Steel mills, auto plants, and the textile and rubber industries are crumbling. The computer industry will soon face a unified government-orchestrated attack from Japan, while our industries' responses will be divided.

According to this left-liberal view, correctives are to be found in emulation of "Japan, Inc.," especially the Japanese Ministry of International Trade and Industry (MITI). In other words, the solution lies in government-guided collaborative efforts, in which business and labor pull together. Government bureaucrats and technologists will serve as the taskmasters and sources of analysis, tax incentives, capital, and informal (if not outright) protection. Recent attempts to turn around the United States auto and steel industries, following the suggestion of tripartite committees, are viewed as American dryruns of this philosophy. Beyond this, the advocates of this highly targeted approach see the U.S. Department of Commerce transformed into a Department of Trade and Development (or some other Americanized version of MITI), with a desk and a committee for each industry. The trade desk would analyze the industry assigned to it, for example, shoes. It would determine whether the industry is a winner or a loser, and whether it has a promising future in terms of productivity, exportability, technology/innovation, labor intensiveness, and other criteria.

The designated "winners" would be showered with government-provided subsidies, loans, loan guarantees, tax incentives, protection (as in a trigger price or import quotas), R&D write-offs, and other types of support. The losers would be buried or "sunsetted." The government then might provide the workers with "trade adjustment assistance" to help move them from parts of the country where the losers congregate (Detroit, Pittsburgh) to where the winners roam (the Sunbelt, coal states). Retraining for laid-off workers would also be provided.

Such a policy might be called "national planning," but as the term tends to raise fears of creeping socialism, most of its advocates avoid the label. Instead, the term "industrial policy" is in favor. It is quite appropriate, because the assumption is that the unit at which levers of policy are to take hold is not "the economy," or a major sector, but specific industries. Also, "industrial policy" is the label used for detailed government planning and direction of corporate efforts in other countries.

Critics of this philosophy raise three major questions:

1. Do we have the analytic capacity to determine correctly who will be a winner or who will be a loser? Does not our record suggest that we will misidentify industries and sink vast amounts of public resources in tomorrow's Edsels?
2. Will our polity, in which the government tends to be weak compared to business, labor, and local communities, be able to channel resources to those who merit them in terms of some rational analysis, rather than to those who have political clout?
3. Are both voters and leaders in the country willing to accept more politicization and less reliance on the marketplace?

At the center of the continuum, between supply-side economics on the right and industrial policy on the left, is the conception of reindustrialization; that what ails the country is public and private overconsumption and underinvestment, resulting in a weakened productive capacity.

Historically, industrialization is achieved in two main stages. First, an infrastructure is developed, in which nationwide transportation systems are set up (in the United States it was canals and railroads); cheap power, neither animal nor human, is made available (the mining of coal and drilling of oil wells); technological innovations are advanced (the steam engine, for example); modern communications systems are evolved (e.g., the telegraph); legal and financial institutions are developed (national currency, banks, stock exchanges); and the labor force is prepared (the rise of vocational education, the acculturation of immigrants).

While technological and financial factors tend to command the most attention in discussions of industrial development, the importance of human capital should not be underrated. Industrialization requires a labor force that is motivated, educated, and trained to staff factories, offices, financial institutions, and laboratories. In the United States, unlike many developing countries today, the very availability of persons was a major problem at the beginning of industrialization. Although some industrial workers came from farms, the large majority were immigrants—perhaps 35 million of them. Farm hands and immigrants alike had to be educated to acquire the outlook and values of an industrial society; beyond that, they had to learn the specific skills required by industry.

As the infrastructure develops, it becomes time for the second stage of industrialization: the capital goods sector emerges, which builds heavy-duty machinery and plants (steel mills and so on). This sector does not produce consumer goods, but rather the tools to produce them. When these two stages are well advanced, a society can mass-produce consumer goods and services.

Signs of deferred maintenance and lack of adaptation to the new environment of expensive energy can now be seen in most of the elements that make up the infrastructure and capital goods sector of the United States. There is urgent need, for example, for improvement in the means of commodity transportation (railroads and bridges, for example); for energy development and conservation (without excessive commitment to any one path); for larger investment in research and development (especially applied R&D); and for improvement in the development of human capital (particularly in seeking to bring vocational training and actual jobs closer together). On the capital goods side, greater encouragement for investment is essential.

The suggested cure for the economic malaise is semitargeted: release resources to the private sector, but channel them to the infrastructure and capital goods sectors—away from either public or private consumption. For example, if we cut government revenues by $50 billion through across-the-board tax cuts, the funds released might well be used to spur private demand for consumer goods and services (gasoline, for instance); little rejuvenation of productive capacity would occur. On the other hand, if the resources released are guided to the productive sectors of the economy— not to specific industries—reindustrialization may take place. Thus, if tax revenues are "lost," not just through tax cuts for individuals, but in part by allowing accelerated depreciation for those who replace obsolete equipment or those who replace oil-based or energy-inefficient equipment with equipment which is energy efficient or uses alternative energy resources, the released resources will revitalize industrial development. There will be no determination of which specific industry will benefit: steel or textiles, rubber or rails. The polity will set the context; the market will set the target.

Similarly, providing tax incentives for greater R&D expenditures spurs on all such revitalization efforts; it does not require a government trade desk or tripartite committee to decide which R&D project is desirable. And, if workers are provided with productivity-based incentives so that they can share directly in renewed economic growth, Washington need not be involved in determining which group of workers is eligible for supplements; this is best done by the management and workers within each corporation.

Reindustrialization thus stands between supply-side economics and industrial policy; it is semitargeted, and the context it seeks to advance is a stronger productive capacity.

Critics suggest that such reindustrialization will return the country to the nineteenth century and focus on "basic" rather than postindustrial, high-technology industries. The prefix "re-" does point to a return, but it should not be taken too literally. A return to a strong infrastructure and capital goods sector does not require a return to the same mix of specific industries. Thus, communications satellites and dataphones could do the job of the Pony Express and the Morse telegraph, and slurry pipelines might carry coal in the place of barges. The implied return is to higher investment and innovation in the productive sectors, not to anachronistic details.

On a second count, however, reindustrialization must plead guilty as charged. It does favor mitigating the criteria of "comparative advantage" with considerations of developmental economics, national security, and social responsiveness. Studies of developmental economics show that a measure of government provided incentives and support, even short-term import limitations, is often essential for developing a new industrial base. The same might hold true for renewing one. National security requires that we not grow so dependent on imported coal, steel, and shipbuilding that we are unable to withstand interruptions or boycotts. Social considerations urge us not to export all blue-collar work to third-world countries; we have plenty of our own unskilled labor. Moreover, social considerations, both ethical and practical, require that reindustrialization be carried out in a much more socially sensitive and responsive manner than America's first industrial development. The call for a national accord on our priorities for the next decade must cut both ways: the various social interest groups will have to moderate their demands; but at the same time, the business community will have to accept a wide sharing of the renewed wealth.

Vocational education belongs in the general agenda of reindustrialization, primarily because of its concern with the size, composition, and quality of human capital (or labor). The main elementary observation is often overlooked. Vocational education is but a step, albeit an important one, in the education/job sequence that starts early in life. Beginning in the family, the sequence continues with the general education part of schooling, and leads, after vocational education, to job training. This means, on one hand, that if education in the preceding institutions is inadequate or misdirected, those who enter vocational education will be, by definition, underprepared. This vastly increases the *remedial* demands on vocational education, strains its resources, and dilutes its outcomes. Similarly, if no, few, or chiefly unattractive jobs await the graduates of vocational education, it cannot be expected to provide the same kind of incentives for its students that are available when jobs and vocational education are well meshed.

Structurally, this implies that (a) vocational education is not best served when it is run in institutions dominated by general educators, especially if those educators are not supportive of job education; (b) more interaction is needed between those generating jobs and those who provide vocational education; and (c) it does *not* follow that places of employment should provide more vocational education; they might tend to be too focused on job *training* rather than a well-rounded education. This concept of switching the responsibility of training from schools to places of employment has a particularly negative implication for small businesses, who either cannot afford to offer training, or where employees must have a variety of skills instead of training limited to one specific area.

Probably the most urgent question is not, Who should run vocational education, in what institution, drawing on what public funds? The question is not even to what extent social priorities need to be balanced more effectively with industrial needs. Rather, we are asking, What is meant by deficient employability skills?

Employers tend to suggest that as many as 60 percent of the youths they employ are deficient in employability skills. While some feel that such complaints have been with us forever, others show data that indicate at least some deterioration in writing, computing, and other such basic skills over the last few decades.

The real question here is, What is the source of the problem? This is a question that needs answering before a comprehensive job education program, and within it, a strong vocational education program, can be designed.

If the limitations mentioned here are due to deficient teaching and insufficient exposure, remedial classes might help. If lack of IQ is the case, simplification of teaching might be needed. If psychic preparation, especially the ability to motivate oneself, concentrate, and command self-discipline, is the case, all the "preceding" institutions will have to participate in a true reform. While I personally see some signs that the main problems lie in the lack of psychic preparation, which hobbles job education in general, vocational education in particular, and ultimately employability, it would be ill advised to base a reindustrialization of job education on such an assumption unless it is substantiated. In other words, clarification of this issue is the most urgent task facing vocational education, and the treatment of this issue provides an essential element in dealing with all other problems.

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VOCATIONAL EDUCATION AND REINDUSTRIALIZATION

What Is Vocational Education?

Ever since the beginning of World War I, Congress has spent tax dollars to encourage the states to provide education that helps youth and adults qualify for new or better jobs. The states pass this subsidy on to secondary and postsecondary schools that offer approved training programs. The emphasis is on the development of the skills, knowledge, and attitudes that are needed in productive work normally requiring less than a baccalaureate degree for entry. The only professionals who can be trained using these specific tax dollars are vocational educators. However, many vocational graduates eventually go to four-year colleges and become professionals.

Schools are not required to participate in vocational education, but almost all high schools and community colleges, in every state and territory, have elected to provide vocational programs. In fact, local and state governments have chosen to spend more than ten dollars of their own tax funds on vocational education for every federal dollar that they receive. Obviously, local school officials feel that vocational education is good for their community.

Similarly, the trainees decide whether or not they want vocational education. If they are full-time workers or have left school and are unemployed, they can choose to spend their free hours in many ways other than in vocational classes. In addition to giving up their free time, vocational students must pay tuition fees; and, unlike the trainees in other government training programs, they receive no stipend. If they are full-time students, they have a choice of three curricula: vocational, college preparatory, or general. The latter "does not necessarily prepare you either for college or for work, but consists of courses required for graduation plus subjects that you like" (Flanagan et al. 1964, p. 5). The general curricula is generally considered to be the least demanding of the three and is the curriculum choice of the majority of students who later drop out of school (Combs and Colley 1967). Obviously, both the full-time and part-time trainees who have chosen to participate in vocational education feel that it is good for them.

Similarly, adults support vocational education. When asked in a Gallup poll about the high school subjects they had taken and "found to be most useful in later life," adults listed commercial subjects and shop in the top five (along with English, mathematics, and extracurricular activities). Those who did not participate wished that they had. Typing and other secretarial skills, mathematics, and shop were listed as the three subjects that would be of "special help . . . now" (Gallup 1978).

NOTE: "Revitalization" seems to be the current word that is replacing "reindustrialization." The latter term, coined by Dr. Amitai Etzioni, bothers some people who believe that we have a postindustrial society and others who recognize that business, as well as industry, needs reinvigoration. Few disagree with the concept, however, once they understand what is meant.

This paper has been improved by the comments of many people, but especially by Dr. Sar Levitan. The author, however, is responsible for its contents.

Vocational education grew slowly but steadily throughout its first fifty years in the United States (though it had a brief, major expansion during World War II when school shops ran twenty-four hours a day, training workers for war production). In the sixties, it began to expand rapidly to accommodate the postwar baby boom, and in the seventies it expanded again because a higher proportion of youth and adults chose it instead of other educational activities.

Today, the principle roles of vocational education are:

1. Preparing individuals for work, for entry jobs, upgrading, retraining, and cross training.
2. Providing orientation to work.
3. Ensuring equity for individuals and population groups in preparation for work. (*Position Statement* 1980, p. 3)

More than half a million instructors provide vocational education to 12 million youths and 5 million adults each year. About a third of these students receive "occupational" training and two-thirds get work orientation, consumer and homemaking instruction, and other "nonoccupational" instruction (NIE 1980, p. vi-4). More than 5,000 high schools and more than 2,000 community colleges and technical institutes each provide a choice of programs in five or more different occupational fields (NIE 1980, p. vi-15). Some schools serve a few square miles of a city, but area schools may have dormitories to accommodate students who live hundreds of miles away, or may put shops and laboratories on wheels to take training to all parts of their districts.

More than 150 different occupations are taught, ranging from bookkeeping to welding and from agricultural sales to x-ray technician training. Classes are scheduled so that they are accessible to full-time and part-time students. Shops and laboratories simulate conditions on the job as much as possible, and the theory of the occupation is related to its practice. Special efforts are made to ensure access to the training wanted and needed by each student.

Placement in jobs or in advanced vocational training programs is the foremost goal. When economic conditions permit, placement may occur before and during training; for example, cooperative education students work part time, and their schooling is related to what they learn on the job. Because vocational education is never required and because it emphasizes placement, it must take care to replace courses for which there is little demand and must seek out training needs that are not being met elsewhere. To aid in this process, advisory committees are used extensively.

How Effective Is Vocational Education?

We know more about the effectiveness of vocational education than about any other type of education because it has been evaluated repeatedly. Dozens of studies agree that its trainees earn more per year, have less unemployment, and are better satisfied with their work than similar workers who have not had this training. But these differences are minimal.

One reason for this disappointing fact is that the studies are based on averages. The range of quality in vocational education is enormous, so a tally of the average program results does not describe what this type of education is or can do. Nearly all the graduates of some programs earn more than their instructors. In others, the dropout rate is high, and the few graduates are hired only as a last resort. When evaluators look only at averages, these extremes are overlooked. If the poorer programs could be improved or eliminated, naturally the average quality and results would go up also.

Why do we have this range of quality? Each community plans its own programs. Some have better planners; some have better cooperation between business, industry, and the schools. Some spend more money on vocational education; some have far more unfilled jobs; and some have more opportunities for cooperative education than others. Conversely, some communities have a higher proportion of minorities and more persons with limited English-speaking ability. Some communities do a great deal for handicapped trainees, while others do almost nothing.

In addition to these variations from one community to another, there are variations by vocational field and by state. Some vocational subjects do not have enough qualified instructors, so less qualified people teach, or the program is closed. Some states insist on closing low quality programs, while others feel that almost any program is better than none. Some states design vocational education programs to attract employers from other parts of the nation and the world, while others do not.

What Are Vocational Education's Roles in Reindustrialization?

Vocational education can aid reindustrialization by assisting in the training of three major groups for the work of the future: training young people for work, retraining present employees, and retraining those who are reentering the labor force. Only the first of these has received significant attention since the heyday of the GI Bill.

Training Young People for Work

We will soon face a shortage of young workers. From 1936 to 1961 (with the exception of the World War II years) the number of children born in the United States increased every year. The annual births peaked in 1961 when 4.3 million children were born. This baby boom caused the number of young people of working age to increase steadily from about 1950 to the present. This certainly has been a major factor in problems such as rising youth unemployment, which in turn has had an effect on increased crime rates by youth.

For the decade and a half after 1960, the number of births decreased sharply, reaching a low of 3.1 million per year (*Statistical Abstracts of the U.S.* 1980, p. 61). This is 600,000 more births than we had during the depth of the Great Depression, but as a percentage of the total population, it is far lower. As a proportion of the labor force, it is lower still. One effect of this decrease in births is that the number of twenty-year-olds (those born in 1961) began to go down in 1981. And the number of young workers will decrease for the next fifteen years.

I believe that this will result in a severe shortage of young workers by 1990. A similar situation in Japan led them to describe young people who are willing to go to work as "Golden Eggs."

To further complicate the picture, the birthrate has declined much faster for whites and for middle-class families than for the population as a whole. This is almost certain to make it easier for white youth to get jobs. And, because the gap between opportunities for white and minority youth is likely to increase, we can expect envy and added frustration among the latter, particularly if they have had no training.

There are four major possibilities that may invalidate my prediction of a shortage of young workers. One is that the economy could collapse. Another is that we could have a continuing, large flow of immigrants who will be eager to take the jobs normally held by young workers. Certainly we have had a major, recent influx of immigrants, both legal and illegal. Although it seems likely that there will be pressure to allow immigration to increase, the keys to the actual amount of immigration are likely to be (a) how many acceptable jobs will be available in less developed countries (what, for example, will happen to the oil-fueled economy of Mexico?), and (b) how will unskilled, alien workers adapt to the continuing trend toward higher technology in this country's work?

A third reason that fewer young workers may be needed could be that they will be replaced by robots and other computer-controlled devices that will work more efficiently. I would fear the effects of this revolution more if I had not lived through repeated predictions of similar effects that never materialized. One of my favorite stories is of Tom Watson, the former president of International Business Machines. He was so remorseful about the mass unemployment that he felt would result from the introduction of his company's new computers in 1960 that he gave Harvard $10 million to find ways of relieving the misery. Harvard had some difficulty in studying a problem that did not exist. But the federal government had less difficulty in diverting the Manpower Development and Training Act (MDTA) of 1962 from its original goal of retraining the predicted thousands of technologically unemployed who did not exist. MDTA became a program for aiding the poor, a group that certainly did exist.

The fourth possibility is that the number of women in the labor force will continue to increase dramatically. At first glance, this would appear likely. Certainly the proportion of adult females who are in or are looking for paid work increased from about 32 percent in 1947 to 52.2 percent in 1981 (Bureau of Labor Statistics 1981, Table A-1). Even though we created about 1 million new jobs per year during the last two decades, these were not quite enough jobs to employ every young worker plus the many women who chose or were forced by economic necessity to seek paid work. It is an oddity that the percentage of adult males seeking employment decreased every year from 1948 to 1981 (from 87 percent to 77 percent), while at the same time, the rate for females increased so dramatically.*

Continued inflation may, of course, force even more women into employment (along with retirees of both sexes). In some countries, 60 percent of the women work.* I do not agree, however, with those extrapolators who think that before long there will be a higher proportion of females than males in the labor force. Indeed, I (and no one else, as far as I know) think that in the United States, as more employed women reach early retirement age and as more conservative groups gain power, the proportion of women seeking employment will actually go down. If you were to press me for figures, I would guess that the peak will occur at about 55 percent, before 1990. If so, this would add to our shortage of younger workers, rather than decrease the problem.

If the economy stays reasonably robust, I believe (for the reasons stated above) that we will not have major increases in immigration and that technology and older women will not take over most of the jobs typically held by new entrants into the labor force. If so, it seems clear that we will have a major shortage of young workers.

Employers have become accustomed to having a large number of young applicants for each good job that is available. The only jobs that have had shortages of applicants are those that require specific training or that have poor working conditions. When many people apply for jobs, the employer can choose the best, train them, and expect that they will be employed long enough to recoup the costs of employment and training. But when there is a shortage of young workers, even the good jobs have few seekers. This means a lower selection ratio and more turnovers. Consequently, employers are less willing to invest in training, and are likely to begin demanding that government aid them by providing training to current and prospective employees. At the same time, government will push employers to spend more on training.

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*Sar Levitan, personal communication, Washington, DC, 1981.

Germany, which had a severe shortage of young workers during the fifties and sixties, turned first to the recruitment of aliens to meet their labor needs. This had a number of unanticipated bad effects, so they expanded the vocational training of German youth to a point far beyond what we have. (Now they have a different problem. The "guest workers" had so many children that Germany began to have serious youth unemployment. This led them to require employers to provide more training slots than there are youth, in order to take young people off the street.)

I predict that our shortage of young workers will have similar effects. We have been encouraging substantial immigration (though not as overtly as the Germans did). We have been expanding the quantity of vocational education. The next step will be to improve the quality of vocational education and to match it to the needs of the reindustrializing America. If that does not produce enough high quality training programs, government may go even further in dictating to employers what training they must provide and to whom. The emphasis will be on the training of youth, even though the social need to retrain adults may be even greater.

Retraining Present Employees

Investment in more efficient producers, processes, and equipment is a basic tenet of reindustrialization. This will necessitate job redesign and the retraining of already employed workers on a scale that has not been approached since World War II. Whole industries may be abandoned when the subsidies that support them are removed. Their workers will need to be retrained for jobs in growing, efficient industries. It seems certain that there will be continued increases in the demand for skilled workers who can install, adjust, and repair the increasingly complex equipment that is being used in all forms of work.

Who will do the training? Much of it will be done on the job. But we now know that on-the-job training (OJT) is not very efficient if the flow of trainees is large. When the ratio of trainees to workers gets too high, workers spend too much time instructing trainees, and both the quantity and quality of work suffer. OJT is much more effective for most of the troubleshooting, repair, and creative jobs if it follows or is accompanied by classroom or laboratory instruction in the theory and practice of the work. This is the type of training that vocational education can do best.

Reindustrialization poses a problem that is nearly equal to the challenge of conversion from peacetime to wartime industry. We met that challenge successfully during World War II, with vocational education playing a major role in the massive retraining of workers. We can do it again.

Retraining Those Reentering the Labor Force

The largest group of individuals who reenter the labor force are women who left paid work earlier in life to raise a family. Another significant group of reentrants are women (and many men) who have been forced out of employment by a geographical move to facilitate the career of spouses. Still others who were forced out by bad health later seek reentry.

It has always been true that the longer one is away from paid work, the more likely it is that one will need substantial retraining. But, reindustrialization is certain to increase the amount of retraining needed by reentrants, because it will cause their jobs to change more rapidly while they are away. Vocational education has made substantial progress in aiding homemakers who are returning to paid work, but much remains to be done, for them and for other reentrants.

A similar need for retraining occurs as a result of early retirement. Almost a fourth of adult males are not working and not looking for work, and an increasing proportion of them are in their forties and fifties. Some have been forced to retire early, but an increasing percentage has elected to leave work because of the structure of their retirement plan. These plans continually reduce the difference between retirement pay and working pay, so that many workers over age fifty-five can receive almost as much money in retirement as they do in full-time work.

Once these individuals retire, however, the situation may look less inviting. Inflation may cut the purchasing power of a pension in half every decade. Boredom may be overpowering. Many of these people wish they knew how to get back to work.

Many retirees need retraining to reenter work, and again, the longer they have been retired, the more retraining they need. Some can use their current skills but need to know how to become entrepreneurs. Others need to know how to adapt their skills to work in new settings, perhaps even in volunteer work. Others need to rebuild their self-concepts or require assertiveness training.

As reindustrialization progresses, it will be more difficult for retirees to return to work without retraining. It makes sense to build on their current skills whenever possible. Vocational education can assess these skills and build individualized retraining programs based on each trainee's needs.

The Revitalization of Vocational Education:
What Needs To Be Changed?

Just as the economy needs revitalization, so does vocational education. Although it is basically sound, it has numerous deficiencies that must be remedied so it can be of maximum service to the nation and to its citizens. There are deficiencies in content, in the types of people served, in equipment and facilities, and in staff:

1. Content (What Is Taught)
    a. Inadequate variety of programs in rural areas
    b. Too much content taken from the most obsolete portion of business and industry instead of from the most up-to-date portion
    c. Too much content based on obsolete practices rather than on current and future work
    d. Too little emphasis on developing entrepreneurs

2. Individuals Served (Who Is Taught)
    a. Too little service to adults
    b. Too little emphasis on serving people with special needs (e.g., the handicapped, those with limited English, convicts, and the poor)
    c. Too few programs for the gifted and talented
    d. Restrictions on who can enroll (because classes are offered only during the day or during the early evening, only to full-time students, only to those who enroll in September, etc.)

3. Equipment and Facilities (What Is Used in Teaching)
    a. Considerable amounts of out-of-date equipment
    b. Some obsolete buildings, particularly in large cities
    c. Some buildings in the wrong places
    d. Some buildings used only from 8 a.m. to 4 p.m.

4. Staff (Who Does the Teaching)
    a. Many instructors whose training is technically obsolete
    b. Some instructors who don't know how to organize, present, or evaluate what they teach
    c. Too many administrators who don't understand vocational education
    d. Salaries that are too low to attract qualified instructors in some fields
    e. Many counselors who lack knowledge of the work world
    f. Inadequate programs for training staff and keeping them up to date

What Does Not Need To Be Changed?

Many of the critics of vocational education suggest changes that would *not* improve the system. Contrary to their recommendations, we should *not* do the following.

1. We should *not* remove all vocational education from the secondary school. More than two-thirds of the high school students take one or more vocational education courses. It is true that the more expensive postsecondary vocational programs increase the earnings of graduates more than the high school programs do. But, if there were no vocational education in the high school, adolescents would lose opportunities for career exploration; the dropout rate would jump, which would decrease the amount of general education; and we could not accommodate the increased demand for postsecondary vocational education.

2. We should *not* transfer all vocational education from schools to employers. Most small employers cannot offer substantial amounts of training, except through cooperative education. Large employers are effective trainers, but all employers tend to shut down their intake of trainees when they are not expanding. Everyone agrees that the most economical time to offer training is during economic recession. If employers won't do it, then who will? Moreover, employers provide little general education to accompany their skill training. Schools, on the other hand, usually insist that vocational education students spend half or more of their time in general education. Finally, employers rarely are interested in providing training for employees who have their own reasons for wanting to change occupations. Schools, on the other hand, should be attuned to the needs and wishes of their clientele.

3. We should *not* fund only those programs whose graduates can find immediate job vacancies. Otherwise, we would have to close all programs during a recession. A far better choice is to fund programs in which trainees are willing to invest their time. It is true that some students will invest in useless training, but students (and their parents) seem to have as good a track record as labor economists in predicting which training will pay off. And, students know far better than anyone else what is interesting to them. The customer is right, at least in the long run.

4. We should *not* judge programs as if they could or should enroll students on a quota basis, taking into account sex, race, and ethnicity. Obviously, there should never be artificial barriers to enrollment, but choice of occupation should not be legislated.

Relationships between Vocational Education and CETA

The relationships between the Comprehensive Employment and Training Act (CETA) programs and vocational education remain anonymous. During its first forty years, vocational education professed an almost sole concern for increasing individual productivity. Not until the Vocational Education Amendments of 1968 did it make widespread attempts to serve the disadvantaged and handicapped. Even today, most of the 25 percent of students who drop out of school before graduation do so before they have an opportunity to enroll in vocational education. Most of these dropouts are poor and disadvantaged individuals. But in spite of its failures to serve the dropouts, and in spite of its stated pre-1968 goals to serve only those "who could profit from training," secondary school vocational education has actually served those who were not interested in or were rejected by the college preparatory curriculum. Consequently, it has attracted students who tend to be below average in verbal ability and in socioeconomic status (SES).

Similarly, the Manpower Development and Training Act (MDTA) of 1962, the precursor of CETA, began with an interest in productivity. Its stated purpose was the retraining of workers who were unemployed because of technological change. However, by the mid-1960s, MDTA was devoted almost entirely to helping unemployed young adults, particularly urban, minority youth who tended to have verbal ability and SES levels similar to the lower half of those served by vocational education.

Vocational education began outside the educational establishment, under the guidance of a separate federal board, and became part of the U.S. Office of Education during the thirties. Even today, several states have separate state boards of education and vocational education. Nevertheless, vocational education has provided most of its training through the public secondary and postsecondary schools. CETA, on the other hand, generally has preferred to purchase training rather than provide it. And, it has tended to choose the training that is provided by employers, community-based organizations (CBOs), and proprietary schools, rather than by the public schools.

Until the mid-seventies, CETA and vocational education generally kept an arm's-length relationship. For example, CETA carefully avoided serving students of high school age, unless the high school principal specifically released the individual trainee. (Perhaps the U.S. Department of Labor remembered its colossal conflict with the educational establishment, which killed the National Youth Administration's parallel secondary vocational school structure just before World War II.) On the other hand, few public schools were interested in a close relationship with CETA, in part because they were struggling with the highest enrollments in their history.

In recent years, however, things have begun to change. Most public schools are worried about declining enrollments. Congress has encouraged joint planning and has earmarked 22 percent of Title IV funds for YEDPA programs to be conducted by local education agencies. To everyone's surprise, most prime sponsores have spent far more than the required minimum on joint activities. Clearly, the time has come for more collaboration between CETA and vocational education, not just at the local level, but at the state and national levels as well.

Impediments to CETA/Vocational Education Collaboration

At the federal level, vocational education is fractionated within the U.S. Department of Education. What is needed is an education and work group that can bring together vocational education, bilingual vocational education, career education, vocational education for special needs students, industrial arts, entrepreneurship education, experience-based education, and other related programs. Once this is done, perhaps dialogue with the U.S. Department of Labor can be more fruitful.

At the state level, the Balance-of-State CETA organization is generally weak. Consequently, CETA service to the rural poor is rarely satisfactory, and communication with the state vocational education establishment leaves much to be desired. Perhaps those states that have strong area and postsecondary vocational and technical programs serving all parts of the state should be allowed to turn to them for operation of the Balance-of-State CETA programs.

The greatest barriers to collaboration, however, are related to goals rather than to organization. The national thrust toward reindustrialization demands an emphasis upon increasing the productivity of all workers. The impending shortage of young workers makes this emphasis even more essential. Vocational educators, particularly in the postsecondary schools, know how to develop productivity in students. CETA needs to adopt teaching productivity as a goal.

Conversely, CETA has emphasized service to the most disadvantaged workers, while much of vocational education has adopted this goal only reluctantly. The increasing gap between opportunities for young white and young minority workers (based on differential numbers of births) demands that vocational education join CETA in wholeheartedly attacking this problem.

Both CETA and vocational education have just begun to learn how to develop the skills of handicapped workers. We now have the technology to move almost all handicapped people from institutions and sheltered workshops into competitive employment, but the new techniques need to be put to work. CETA and vocational education are the logical systems to do it.

A little noticed change in congressional procedures may be the catalyst to force greater dovetailing between CETA and vocational education. "Reconciliation" requires that the Senate Subcommittee on Education and Employment divide a fixed appropriation among all funded activities. Thus, a dollar allocated to CETA is subtracted effectively from vocational education, and vice versa. This could lead lobbyists for the two groups to attack each other, but it is likely to lead the committee to demand more coordination between the two programs.

What Should Be Done To Make The Needed Changes?

1. At present, about 25 percent of federal vocational education funds must be spent on improvement of vocational programs (staff training, equipment purchases, buildings, research, development, and curriculum improvement). Most of the remainder is spent on program maintenance (salaries, supplies, and so forth), which should be the responsibility of state and local agencies. Federal support for program maintenance should be shifted, over a four-year period, to program improvement. Block grants, if they must be used, should be restricted to vocational education program improvement (rather than program maintenance) activities.

2. Equipment is very expensive in many vocational fields. For example, it costs a minimum of $200,000 to equip a vocational machine shop. Consequently, many such programs use equipment that came from World War II surplus and is forty years old. Advanced training must usually be done on the job, but introductory training can be done effectively on equipment that is five years old. If industry could depreciate fully all equipment that is donated to and used by vocational programs, company management would be more likely to buy modern equipment to replace the donated items (thus aiding reindustrialization). Secondhand equipment is not a total answer, of course, but the availability of five-year-old tools would improve the quality of vocational equipment dramatically.

3. Much research and development money has been used to find better ways of collecting data to prove that previous vocational education programs have been worthwhile. For example, millions of

dollars have been spent on follow-up studies that give essentially the same results: programs conducted two or three years ago paid off, but did not pay off heavily. The time has come to concentrate R&D funds on improving present and future programs. We need to know when to use on-the-job training and when to use formal classroom and laboratory instruction. We need to develop specialized equipment for instruction. For example, many of the functions of a million dollar numerically controlled machine tool could be taught on a specially designed plotter at far lower cost. Many troubleshooting tasks and complex industrial processes could be simulated on microcomputers if existing programs were adapted for school use. The very modest federal vocational education R&D budget of $10 million should be quadrupled, and a substantial portion of these funds expended on the improvement of vocational instruction. Regional R&D centers should be established to aid state program improvement efforts, and to supplement the work of the National Center for Research in Vocational Education.

4. We must develop a system for updating skills of vocational staff members. The more rapidly business and industry change, the more rapidly the training of vocational instructors becomes obsolete technically. To remedy this, schools hire instructors from business and industry. Often, these instructors have no idea of how to teach the occupation's skills or how to evaluate how much students have learned. Moreover, many of them bring from the job certain biases that interfere with instruction of minority groups and women. Similar problems exist with vocational counselors, administrators, and teacher educators. The identification of vocational staff who need retooling, the provision of adequate ways to update their skills, and the development of incentives for staff improvement are major tasks deserving high priority (Evans 1980).

5. Traditionally, the content of vocational education programs has been based on local surveys. As the mobility of skilled workers has increased, this is no longer adequate. The welding industry is working with vocational educators to develop a curriculum that will train welders to work anywhere. Similar consortia should be encouraged in other businesses and industries.

6. Vocational education typically has served students who are below average in verbal ability and who come from working class homes. Some community colleges and technical institutes are developing technical education that challenges students who have high verbal and computational skills. More and more, these programs reenrolling the most capable high school graduates as well as unemployed college graduates who need training which is salable. The Vocational Education Act of 1963 prohibits the training of people for professional work. This restriction should be removed, as long as the training can be accomplished in less than three years of postsecondary training.

7. Rural residents rarely have access to vocational education in a broad variety of occupations. Their high schools typically offer only agriculture, business, and home economics. Community colleges with the largest number (and the widest variety) of programs tend to be situated in urban areas, and do not have dormitories for students. In many states, they discriminate against students who live outside their district. The goal of every state should be to have a system of postsecondary vocational and technical education that is available equally to each of its residents, rather than to give preference to some on the basis of where they live.

8. In most parts of the country, the declining adolescent population will close many high schools. Fear of losing their jobs causes high school staff to decrease the number of students that they will send to area vocational schools. In turn, this leads to low enrollments and high costs per student in area schools. In many states the area schools are about to collapse, but in others they seem to be thriving. Why? How can we use the area vocational school as the nucleus for a large, comprehensive high school to replace small schools with limited programs and declining enrollment? A major, national study of this problem is needed immediately, followed by remedial action.

9. Most evaluations of vocational education are based on the premise that full-time students are in one of three curricula: vocational, general, or college preparatory, with little overlap among curricula. Recent research shows clearly that this model is inadequate (Copa and Forsberg 1980). In fact, many students from the other curricula take one or more vocational courses. Part-time students may enroll in a 4-hour short course or in a 144-hour course lasting all year. Most data collection systems count each of these as one course. The costs of vocational education should be based on the number of hours spent in it, rather than on a count of courses, or even worse, a labeling of students as being either vocational or nonvocational. The amount learned should be judged in terms of competencies and job satisfaction, rather than courses or programs completed.

10. Linkages to local private industry councils (PICs) should be strengthened, rather than placing total reliance on coordination of government efforts. State advisory councils should draw at least half of their members from business, industry, and labor.

11. It has been charged that vocational education has been a major factor in keeping the annual pay of women below that of men, because thirteen out of seventeen "traditionally female occupations" are taught in vocational education (*Report* 1980, p. 5). A study of the effects of eliminating female enrollment in these thirteen occupations would be illuminating, but what is really needed is a study of the reasons why people choose to receive training in sex-stereotyped fields.

12. The U.S. Department of Education (or its successor) should organize an Education and Work Unit that would include vocational education, career education, bilingual vocational education, vocational education for the handicapped, entrepreneurship education, experience-based education, and other related groups now scattered throughout the Department. This unit should begin immediate discussions with related groups in the U.S. Department of Labor to identify ways in which their programs can complement each other at the federal, state, and local levels.

Summary: Quality Is Needed More Than Quantity

The recent increase in the size of vocational education has not been accompanied by a uniform increase in quality. In fact, some aspects of vocational education have stood still while business and industry have changed markedly, and while the characteristics of the trainees to be served have also changed. Substantially improved quality in some parts of vocational education is essential if it is to play a key role in reindustrialization. The goal, of course, should be uniformly high quality.

There are four keys to quality in vocational education: content, trainees, facilities, and staff; in other words, "what is taught," "to whom it is taught," "what is used to teach it," and "who teaches it." These four keys are dependent on each other, for if one is gravely deficient or is particularly strong, the others are hampered or enhanced. If all four are first rate, there is no problem in preventing dropouts, in placing the graduates in satisfying and meaningful work, and in aiding the reindustrialization of our nation.

The quality of vocational education is affected most by what is done at the local level. Local supervisors, instructors, and advisory committees affect quality markedly. Some states have proved that they, too, can act in ways that improve quality. The principal efforts of the federal government have been twofold: to assist the states in maintaining existing programs, and to ensure that funds have been spent in accordance with the letter of the law. The federal establishment has made small, but significant, contributions toward R&D and staff development; but for a variety of reasons, it has become less and less involved in improving quality.

This paper suggests ways in which the federal government can act and assist the states in the revitalization of vocational education. The principal change suggested is that Congress cease supporting the status quo and move toward encouraging improvement of vocational education programs. Without changes such as those suggested here, the reindustrialization of the nation will be more difficult, more expensive, and more time consuming.

REFERENCES

Bureau of Labor Statistics. *Employment Situation.* Washington, DC: U.S. Department of Labor, March 1981.

Combs, Janet, and Colley, W. W. "Dropouts: In High School and After School." *American Educational Research Journal* 3 (1967): 343-363.

Copa, George, and Forsberg, Gary D. *Measuring the Employment and Further Education Effects of Secondary Vocational Education in Minnesota.* Minneapolis, MN: R&D Center for Vocational Education, University of Minnesota, 1980.

Evans, Rupert N. *Reauthorization and Vocational Teacher Education.* Urbana, IL: University of Illinois, Bureau of Educational Research, 1980.

Evans, Rupert N. "Reauthorization and the Redefinition of Vocational Education." *VocEd—Journal of the American Vocational Association* (January/February 1981): 30-34. Vol. 56(1).

Flanagan, John; Davis, Frederick B.; Dailey, John T.; Shaycoft, Marion F.; Orr, David B.; Goldberg, Isadore; Neyman, Clinton A., Jr. *The American High School Student.* Pittsburgh, PA: Project TALENT Office, University of Pittsburgh, 1964.

Gallup, George. "The Public's Attitudes toward the Public Schools." *Phi Delta Kappan* 60, No. 1 (September 1978): 33-45.

National Institute of Education. *The Vocational Education Study: The Interim Report.* Vocational Education Study Publication No. 3. Washington, DC: U.S. Department of Education, National Institute of Education, 1980.

Position Statement of the National Association of State Directors of Vocational Education. Indianapolis, IN: The National Association of State Directors, 1980.

Report on Education Research. Washington, DC: Capitol Publication Newsletter, Vol. 12(24), November 26, 1980, 5.

Statistical Abstracts of the United States. Washington, DC: U.S. Government Printing Office, 1980.

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WORK, EMPLOYMENT, AND THE NEW ECONOMICS

I believe that we are witnessing an historic shift in our approach to employment policy, and that this shift will have profound implications for vocational educators. This shift is most recognizable in the waning of influence of demand-side economics and the ascendance of an alternative called supply-side economics.

Since the Great Depression almost exactly a half a century ago, a commitment to maintain full employment has been the centerpiece of public policy. I do not think that is going to change. However, the method for meeting this commitment has been the management of overall economic demand according to the teachings of an infant science created for the purpose called *macroeconomics*. That, I think, is going to change radically.

On August 24, 1980 the Joint Economic Committee of Congress issued a statement that marked the end of an era of public policy. The report said bluntly that the American economy cannot be "fine-tuned" anymore. It reviewed six recessions since World War II, and then concluded that the government's attempts to shorten the duration or reduce the intensity of recessions through countercyclical programs have been ineffective. The report was endorsed almost unanimously by the Committee. All eight of the Republican members, and eleven of the twelve Democrats approved it.

This was an immense and sudden change. Just four years before the issuance of that report, the Committee had reflected the economic orthodoxy that had set the direction of public policy since 1946. It expressed full confidence that the economy could be managed, and reproached the Ford administration for doubting it.

"Administration officials," the Committee had said, "speak as though they had heard nothing of the progress in the past forty years of the highly developed economics discipline," in an evident reference to the publication of John Maynard Keynes' *General Theory* in 1936. It sternly admonished the administration to stop purveying ignorance. Now, the Committee has almost unanimously repudiated these forty years of progress. What was reprehensible ignorance four years ago has suddenly become the new economic wisdom. The renunciation of the Keynesian gospel had become commonplace for a very simple reason. The central proposition of the Keynesian model was that unemployment and inflation had a very neat inverse relationship to each other, like the ends of a seesaw. If unemployment went up, inflation would go down, and vice versa. This relationship was so fixed and predictable that, if charted, it produced a clean line called the Phillips Curve, and thus it was a marvelous policy instrument. For years this soothing assumption was integral to public policy.

Then in the seventies, things began to change. We began to have inflation and stagnation at the same time. It was called "stagflation," and the Keynesian edifice began to crumble. "The Keynesian conceptualization is being torn to shreds," wrote a labor economist. Paul Samuelson, who beyond any doubt had been most responsible for the apotheosis of Keynesian economic theory in the forties, said sheepishly that "experts feel less sure of their expertise." England's *New Statesman* put the matter flatly. "An economist," it said, "is an inhabitant of cloud cuckoo land, knowledgeable in an obsolete art." James Callaghan, the British Labor Party's Prime Minister, said with a clarity rare in politics: "We used to think you could spend your way out of a recession and reduce unemployment by cutting taxes and boosting government spending . . . That option no longer exists . . . It only worked by injecting bigger and bigger doses of inflation into the economy followed by higher levels of unemployment as the next step. That is the history of the last twenty years." Charles Schultze, chairman of President Johnson's Council of Economic Advisors, echoed that conclusion precisely. "Every time we push the rate of unemployment toward acceptable low levels, by whatever means," he said, "we set off a new inflation. In turn, both the political and economic consequences of inflation make it impossible to achieve full employment."

Now, American voters have expressed themselves emphatically by electing a president who promises supply-side economic policy, by purging the whole class of liberal demand-side senators, and by electing a Republican majority to the Senate for the first time in a quarter of a century. Clearly, we have come to the end of an era. Events had already dictated the change. The election was merely the punctuation.

It all began almost fifty years ago when, on what we call Black Thursday, the bottom fell out of the American economy. The Crash was not a single shock, but a crushing series of shocks. The first sickening slide, Black Thursday, was October 24, 1929. Then came Black Tuesday, and , for a while, despair was rampant among investors. Some cried uncontrollably. Others kicked the ticker tape machines. A few, although not as many as legend suggests, went to the roof and jumped. The collapse of the stock market was just the beginning. A year later *Business Week* was still saying, hopefully, that business was only in a mild recession, but in time it was clear to everyone that something dreadful had happened to the American economy. Looking back, the bottom of the Depression, when we finally reached it, was terrifying. The Gross National Product had fallen by half; nearly half of the nation's factories had shut down; Big Board stocks had lost four-fifths of their value; 5,000 banks had closed their doors; 15 million people had lost their jobs; a million families had lost their homes; 18 million Americans were on relief.

The Great Depression (I am old enough to remember it with a child's vivid view) was a national mortification. Men rode the subways all night to keep warm; people put IOUs in church collection plates; Illinois Wesleyan University accepted vegetables for tuition; once prosperous professionals shuffled from door to door selling shoe polish and fly paper; college graduates sold apples on the streets, wearing their caps and gowns.

For the first time in our history, more people left the United States than entered it. The Russians advertised for 6,000 skilled workers, and 100,000 Americans applied. More and more, Americans began to believe that the moment working people had dreaded since the earliest beginnings of industrialization had come at last. There seemed to be an elemental, universal anxiety, a fear that we had produced too much, too fast.

This fear shows itself, in one form or another, in many cultures. Among the Columbian Indians, if one worker is faster than the rest, this individual's work place is marked by a cross, and at the job the next morning the co-workers pray that the worker will be tired and slow.

In the thirties, many Americans believed that the world's work was done. This recession was not like the others, from which, sooner or later, we moved on to even higher levels of productivity. This was the end of the line—an awful fulfillment of a collective premonition that the machine was the enemy of working people. It had lured them away from the land and then, when the work was finished, when the last car anyone wanted was assembled, when the last house had been built, and the last washboard had come off the assembly line, it left them to starve. The work was done, or so it seemed, and the people who had burned their bridges and left their land behind were terrified. It was part of the abundant mythology of that time that America, if not the whole industrial world, was close to revolution in those dark times. However, scholars who have studied unemployed people carefully find that unemployment, far from galvanizing working people, reduces them to a very frightened impotence. Columbia historian John Garraty writes that jobless protests were "sporadic, unfocused, and merely rhetorical." A reporter described the 1932 bonus marchers, who camped in Washington pressing for a veterans' bonus, as "the army of bewilderment, behaving with a curious melancholy." Another reporter, after seven months of driving across the country, expressed outrage at the unemployed workers' passive acceptance of their condition. A sociologist called the unemployed he studied "scattered, loose, perplexed, and hopeless—a mass numerically, but not socially." Three times as many American workers voted for the Communist presidential candidate in 1912 as in 1932. We were, capitalists and workers alike, above all, desperately afraid.

Franklin Roosevelt was merely expressing the conventional barbershop wisdom of the time when he told an audience of businessmen in 1932 that America's great era of growth, which had exploded after the Civil War, was over. "Our task now," Roosevelt said, "is not the discovery or exploitation of natural resources, or producing more goods; it is the soberer, less dramatic business of administering resources and plants already at hand." More growth, he explained, could be dangerous. The American economy, which in fifty years had lifted a whole nation of refugees from poverty, had finally reached the unforgiving winter of its maturity. "We had," he said, "produced too much too fast." Now the problem was a strange new economic phenomenon called "underconsumption." A few weeks later Roosevelt was elected to the presidency, and what he had told that business audience became the basis for nearly a half a century of public policy. It marked the beginning of an era of demand-side economics and became the declaration of a war on production that would last for over fifty years. The problem was, or seemed to be, that the economy was producing more than the people could afford to buy. "The cure," the president said bluntly, "is not to produce so much." So the first stage of the homespun struggle against production began—bizarre only because it was so innocently direct and literal.

When the price of crude oil fell to ten cents a barrel, Oklahoma's Governor "Alfalfa Bill" Murray sent troops to stop oil production. The federal government paid farmers to plow crops under and kill new litters of pigs. Almost from the beginning, there was a tremendous pressure for government spending to get the economy moving. According to Dorfman's standard history of the period, few knowledgeable persons, including economists, doubted that public works expenditures would have to be extended and that deficit spending would continue. "We saved our way into the Depression," wrote one business economist with impeccable conservative credentials, "we must squander our way out of it." A group of "scientific economists" assembled by William Randolph Hearst to support a proposed $5 billion program of public works said that most economists had been pushing for ten years the idea of public spending in depressions to restore purchasing power. However, Roosevelt, interestingly enough, resisted deficit spending. He thought the economy was suffering from an elusive "structural defect," and that pump priming could at best be a stopgap measure until that defect was found and corrected. He was, at the very beginning at least, much more interested in programs like the National Recovery Act, which sought to adjust production more accurately to demand, than he was in public works and government spending. Government spending was for relief.

Keynes and Roosevelt met very early in the latter's administration, but neither was much impressed by the other. Roosevelt said he could not make sense of what Keynes said to him, and Keynes expressed polite surprise at Roosevelt's limited economic knowledge. However, it was Keynes, who, in the end, probably had the greatest influence on the country's economic thinking. He published his *General Theory of Employment, Interest, and Money* in 1936, and it was eagerly received by a waiting world. A group of impatient Harvard students pooled their money and ordered copies directly from the British publisher. The book, surely the most controversial and influential of our time, caused a revolution in economic theory, and shortly thereafter, in public policy. Keynes' severest critics called the book a masterpiece. It was, like most great works, the elaboration of a vision, and the Keynesian vision, as Joseph Schumpeter has pointed out, was the vision of a world run down, in which the spirit of enterprise was flagging, investment opportunities drying up, and in which saving had thus lost its usefulness and become a problem. The Keynesian vision saw society, in short, as "baking cakes in order not to eat them."

I do not intend to recapitulate the complex propositions of Keynes' *General Theory,* merely to summarize them in a sentence or two and get on to the issues of vocational education. The Keynesian diagnosis is that an industrial economy can come to rest with less than all its resources employed because there is a tendency for savings to exceed investment opportunities. A free economy does not, as classical economics contends, lead toward providing full employment—quite the reverse. This stagnation and the mass unemployment that was its cruel, intolerable consequence could be remedied by appropriate—if necessary, massive—doses of public spending.

The validity of Keynesian doctrine seemed to be unmistakably confirmed, not by the New Deal—that experience was equivocal—but by mobilization for war. This was the only time it ever worked. Unemployment stood at 16.7 percent when the Hitler-Stalin Pact was signed in August 1939. A few months later, unemployment had disappeared like magic. Federal spending jumped from $9 billion in 1939 to $100 billion in 1945. In 1941, the federal deficit was about $5 billion; two years later it was $55 billion. The economy, so recently pronounced senile, was booming. As one Keynesian wrote later, "the huge federal deficit generated by massive military expenditure produced precisely the consequences anticipated by the Keynesians. What counted was the spending. A society sensible enough to purchase decent health care, public transportation, public libraries, and inexpensive shelter could also enjoy the delights of full employment." The Keynesian therapy was promptly built into the Employment Act of 1946. The government committed itself to maintaining full employment, confident that the means were now at hand. It became the most costly government undertaking in the history of the world, including the Pyramids, and China's Great Wall.

Unemployment was the central problem of industrial society, and the government's task was to remedy it. The best approach was macroeconomic—the creation of employment on a grand scale by stirring up the whole economy, by stimulating consumption. Production would take care of itself; it would tend to follow automatically if demands were kept strong. We no longer killed livestock, or set corn fields on fire, or sent troops to stop oil production. Our active antagonism toward production had cooled. But, an official indifference to the need to maintain and expand productive capacity was built into public policy.

By 1960, the acceptance of Keynes was nearly universal. "We are all Keynesians now," somebody said. If the economic waters receded or left some stranded on high ground, macroeconomics meant flooding the whole landscape, raising the whole level, and setting those people afloat again. There was a powerful tendency to let the microeconomic details take care of themselves. It was an era of overpowering emphasis on demand-side economic stimulation of consumption. Policy approaches that emphasized the supply side, those concerned directly with production, capital formation, and vocational education, were consigned to the shadows. What gave extra appeal to Keynesian analysis was its repudiation of the role of saving. The resentment of capitalism's inequality suddenly had a powerful rationalization.

Classical economics had taught that economic progress depended on saving and that the rich, who saved the most, were most necessary to progress. Keynes stood this proposition on its head. Saving was not only not necessary; it was the principal cause of unemployment. "Prosperity," he wrote, "far from being dependent on the abstinence of the rich, is more likely to be impeded by it." Elsewhere, he wrote more bluntly that "the unequal distribution of income is the ultimate cause of unemployment." Rather suddenly, the public policies of a country that had become the cradle of capitalism became indifferent to the need for capital formation, if not hostile to it.

Almost three decades later, the Keynesian honeymoon was over. The Joint Economic Committee had made it official with only one dissenting vote. The voters seemed to agree, electing the first supply-side majority to the Senate in postwar history. What now? What does this mean for us? It seems to me that if the details are obscure, the general outlines of the next era of economic policy are already clear, and it is not going to make any difference if four years from now we elect a Democratic president or a Republic president. It will be an era of reemphasis on the supply side of economics. It will be an era guided by the kind of economics that says what is good for General Motors, and all of the other individual enterprises born and unborn, is good for the country. It will be an era that reemphasizes capital formation. It will be an era that reemphasizes productivity. It will be an era in which the new slogans will be revitalization, reindustrialization, and recapitalization.

Most importantly for this audience, it is going to be an era of reaffirmation of the centrality of effective vocational education as a primary answer to the unemployment problem. Vocational education is the educational component of the supply-side approach to full employment. The Joint Economic Committee recommended a new emphasis on vocational education. Alfred Malabre, the widely read *Wall Street Journal* columnist, in his most recent book, calls for vocational education as the way "to bring down joblessness with a minimum of inflationary pressure." For half a century, public policymakers wanted to know what to do about unemployment. They called on Harvard's macroeconomists to give them the answers. They were interested in broad, overall, systematic macroapproaches; they were interested in monetary and fiscal policy; they were interested in large economic variables such as M-1A and M-1B, the controversial measures of total money supply.

Unemployment was the central problem, but for thirty years no one sought the counsel of vocational educators. Policymakers were not interested in capital formation. They were comparatively indifferent to enterprise. It was a period of belief in capital punishment, benign indifference to productivity, and a kind of a bored tolerance of vocational education. We have known for twenty-five years what creates jobs in America: it is the formation of small businesses, the promotion of entrepreneurs, self-employment, increased productivity through increasingly effective vocational education.

Now all that is changing. Unemployment is still the central problem; it always will be in a specialized economy. In my opinion, the results of the 1980 presidential election had more to do with the closing of the Ford Plant in Rahway, New Jersey, than with the hostages in Iran, or all of the other issues that are on the front pages of the daily news. There is a basic fear in America that there are not enough jobs to go around; a belief that there is work to be done, but not enough people in jobs to accomplish it. As we tinker with this belief, we will see vast changes in politics.

Despite all this, it is going to be an interesting era. The demand-side medicine has been found to have very dangerous side effects. It has been pronounced hazardous to our economic health. Now, policymakers will be looking in new directions for supply-side policy initiatives. They are going to be looking to vocational education. I hope we are ready.

The beginning of our preparation must be to obtain a fuller understanding of what vocational education means in a postindustrial society. Our mission as vocational educators is being elementally altered. We must still teach skills, but we are going to have to teach skills of a different and somewhat unfamiliar order. We have to go far beyond Prosser, who believed in the precise preparation for specific job slots requested by industry. I do not think Prosser is going to be our hero in the decade ahead. We have to reread John Dewey, that unread and misunderstood genius of educational theory, who wrote that "a proper conception of industrial education would prize freedom more than docility, initiative more than automatic skill, and insight and understanding more than the capacity to recite lessons or execute tasks under the direction of others." Dewey was suggesting that we prepare young people to be self-employable, either on their own or inside organizations—that we prepare them for work rather than for Prosser's precisely prescribed jobs. That battle between Dewey and Prosser has been going on for years and years. But now suddenly it has a new urgency. New demands and unfamiliar demands are going to be made on the vocational system.

We can find the character of these new demands in the full recognition that it was not just Keynesian policy that was wrong; the whole Keynesian premise was wrong; the Keynesian vision was wrong. We have been so preoccupied with the application of demand-side economics and policies that we have forgotten to reexamine the social diagnosis on which they were based. Demand-side policies were built on the idea that the American economy was mature, that it had used up its frontiers; and its capacity for growth, as Roosevelt put it, was nearly over. That mournful assessment, painfully plausible in the thirties, was clearly mistaken then, and is mistaken now.

Since then, we have moved through several completely new generations of technology. Now we are on the edge of a technological revolution so vast in its possibilities, that futurist Al Toffler calls it "the third wave." Nevertheless, the idea that job opportunities are dwindling, that people wanting work are a problem rather than an opportunity for progress, has worked its way deep into the collective subconscious. We have thus tended to see the unemployment question as one of rationing a limited resource rather than releasing a limitless one.

That is the central anomaly of industrial America: there is plenty of work to do in America but there are not enough jobs. Of course there is plenty of work to do. There are plenty of people who want better houses and better clothes. There are plenty of people who want to get on with the rebuilding of our decaying urban centers. More discriminating consumers want better products of better quality. There is much to be accomplished in terms of recycling our nation's resources on a regular basis. This alone is a most exciting possibility for creating jobs in America. By converting industrial processes to reuse waste materials, we will realize half a dozen important ambitions all at once: we can protect the environment and produce products of better quality that take less energy to make. As a bonus, we can improve the balance of payments by reducing imports of raw materials.

There is a staggering agenda of work that needs doing, but a nagging shortage of jobs. This may be because the macroeconomic view of society, along with other misconceptions, saw the work force as some great, inert, shapeless mass, an industrial proletariat, which somehow had to be fully employed. The supply-side policy revolution suggests an altogether different view. It suggests that we have had a half century of misfocus. It suggests that we must begin to prepare young people for work that will always be abundant, and not for jobs that will always be scarce.

Almost accidentally, my institution found that it is preparing young people to create their own work. We have 10,000 students at the Fashion Institute of Technology (FIT) in sixteen different majors. We have our stars, the Calvin Kleins and John Anthonys and Antonios in each of the majors, but we have discovered in study after study that many of our graduates open small businesses—become self-employed. Every time they do, they create more jobs. We must recognize this growing phenomenon in vocational education.

Recently at FIT, we announced a one-day seminar in the newspapers. The advertisement said that on November 15, sixty of the smartest women in the fashion industry would attempt to give 850 women a piece of their mind. We had to return 1,300 checks; we turned away 1,700 people because our theater only holds 800. There is a demand out there that is simply not being met.

What we are finding at FIT is that we have equipped our students not to find jobs, but to find work. We place 96 percent of the students of every graduating class. A growing number are employing themselves. This small distinction between preparing for self-employment and preparing for a job has immense consequences. Graduates who are educated to be self-employed are the ones who create jobs for others. This is precisely the metabolism of economic growth.

The economy grows as new businesses are formed. Big businesses are less a cause of economic growth than one of growth's results. Small businesses are the principal sources of new ideas, of new economic growth, of new work opportunities. A few years ago, in a simple study that became a landmark, the M.I.T. Development Foundation compared job formation in sixteen companies over a five-year period. Six of the companies were seasoned giants with sales in the billions. Five were fairly large companies with reputations for innovation. Five were smaller, new companies built on new technologies. The sales of the six largest companies, such as Bethlehem Steel and General Electric, grew at about 11.4 percent a year, but their employment rolls increased at the rate of only .6 percent a year, and they created only 25,000 new jobs. The sales of the five large innovative companies, such as 3M and Xerox, increased at about 13.2 percent a year. Their employment rolls increased at the rate of 4.3 percent a year. These five companies created 106,000 new jobs. The sales of the five small companies, such as General Data and Computer Graphics, increased at about 42 percent a year. Their employment rolls increased at a rate of 41 percent a year. Their sales totaled less than a thirtieth of the sales of the six giant corporations, but they created 10,000 more jobs than the giant corporations, or about 35,000 jobs altogether.

Another study showed that something like 88 percent of all new jobs in America in the last five years were created by companies with twenty employees or less. An astounding 70 percent of these companies were less than five years old.

We need something like a national rediscovery of the indispensable role of entrepreneurs. They have become an endangered species. I lost a job in California because the system considered me an educational entrepreneur, and I used to hang my head in shame. Now it is becoming a respectable label. Studies suggest that entrepreneurs tend to be poor performers in school. Many entrepreneurs have been school dropouts. This could mean that the conventional educational programs are neglecting the nurture of the imagination. The Marxists have accused vocational educators of creating the personality and cognitive traits that enable individuals to function effectively in bureaucratic work organizations. Maybe they are right. Maybe we have been training and taming people instead of inspiring them. That suggests another frontier, the larger task of making work within organizations more entrepreneurial.

FIT just finished a contract with a major department store chain for a buyer retraining program to help create entrepreneurial conclaves inside the larger corporate world. This is just the beginning of a new way for stores to organize so that employees can control the management and operation of subunits within the larger corporation—in other words, to behave entrepreneurially.

Let me quote a paragraph or two from an unusual article by Norman Macrae, the iconoclastic deputy editor of the *London Economist*. He believes that more entrepreneurial corporate forms are the wave of the future. Macrae points out that since the turn of the century, 40 of the world's 159 nations have grown rich because they were able, temporarily, to increase productivity through a top-down order from executives who determined the work motions of assembly line workers. However, this era, he claims, is over. "Educated workers do not like to be organized from the top," he writes, "and much of manufacturing, and most of simple white-collar tasks can be gradually automated, so that more workers can become brainworkers." Imagination, he points out, is a human quality that cannot so readily be organized from the top down. He believes that many operations that have been run by some disciplined process will need to be made much more entrepreneurial.

There is another optimistic vision of the future of working people. What technology is going to give us, what Toffler's "third wave" is going to give us, is the demassification of the work force. It is going to mean a change in how working people are perceived. No longer will they be interchangeable digits belonging to a great gray mass that the microeconomists call the work force. Instead, workers will be increasingly autonomous, self-supervising individuals who look forward to a rich and intensive life after work. Higher education is going to have to remember this, and institute drastic change in recognition of it.

Higher education, until quite recently, was frankly elitist. Before the American Revolution, Harvard students were listed by social rank when they first entered the school. In those days, common people, defined as those without a college education, were flatly forbidden to "walk in great boots" or otherwise imitate the behavior of their betters. It was a rigidly hierarchical society. Colleges educated the tiny elite destined for the ministry, for the professions, or for the easy responsibilities of the ruling class. The education provided was essentially a liberal arts education. One learned skills in other ways. As the great democratic tradition blossomed in the United States—and it blossomed here as it had nowhere else in the world before—more and more people aspired to more and more education. The model was this same liberal arts education intended for an aristocratic minority (most of whom had no need to earn a living), or for the professional scholar. "Do you smoke?" the great lady asks her daughter's suitor in the Oscar Wilde play. "Good!" she replies, when he admits hesitantly that he does, "I think every young man should have an occupation of some kind." In 1900, about 200,000 students went to college. Last year the figure was over 11 million.

However, the vocationally impractical curriculum simply did not suit the needs of the new masses. So, somewhere along the line, liberal educators began to make an uneasy, tormented case for the relevance of irrelevant education. The consequences have been disastrous for the great liberal tradition of education and for millions of students who have been seduced into believing that liberal education has a vocational relevance which it simply does not, cannot, and should not have. At FIT we recognize that. One-third of our curriculum is liberal arts, and I will fire any teacher who makes it "related." There is no such thing as related economics, related sociology, or related math. The liberal arts have no vocational relevance; they have a vast importance of their own. Now, as a secondary consequence, this culturally indispensable liberal tradition is being discredited because in practice it fails to do what it should never have been represented as doing in the first place. We vocational educators are witnessing an unwelcome reaction against liberal education. The situation has grotesque consequences.

We read in the papers that thousands of young people are "overeducated." How can a civilized person know too much? How can an individual who has struggled for centuries for the leisure that will provide freedom from the exhausting struggle for survival—for some time for rest and contemplation—how can that person be overcivilized? This assumption is absurd! Students can know more than they need to know to program a computer or to work in a supermarket, but can one know so much as to be "overeducated?" To me, as an educator, it is an obscenity to assume that someone could be overeducated. Clearly the rehabilitation of vocational education to include liberal arts and adapt them to the needs of a mass aristocracy has become an urgent necessity. The paradox is that only vocational educators can lay out the real case for liberal arts. We do not have to pretend that they are vocationally relevant. We can say, more forcibly than the liberal educators, that liberal arts are vocationally irrelevant, but that they have a desperate importance of their own.

We have historically divided the arts to which we educate people into three separate domains: the practical arts, the liberal arts, and the fine arts.

All three are, in their way, liberating. All of them free us from enslaving limitations. All of them enlarge us, although in different ways.

The practical arts are the arts of function. Their mastery provides independence from degrading toil. Their conscientious pursuit has enduring, intrinsic value.

The liberal arts are the arts of meaning. Their mastery provides a sense of purpose, of relationship, of order. They free us from the anxiety of alienation. They help us know the full range of human possibilities, and guide our restless efforts to perfect our institutions.

The fine arts are the arts of transcendence. Their mastery provides a sense of depth, of mystery and majesty. They remind us that we can create more than we can comprehend. They free us from the anxiety of limitation.

Lately, I have been haunted by a puzzling, perplexing, heartrending book called *What Went Wrong?* by an English craftsman. He writes about British working people who have largely achieved all of the material goals they sought half a century ago, and who now have no sure sense of purpose. They are asking, with a terrible urgency, whether there can be life after work, or only an emptiness to be filled by passive entertainments, recreational chemicals, and a bored and heavy indolence. In other words, we may be finding that the unemployment problem has two related dimensions. Not only have we left some people wholly unemployed, but we have left unemployed the most human qualities of practically all working people. As we solve the second, less visible problem, the first may simply disappear.

The crisis of macroeconomics may mean that the Jeffersonian ideal, which for two centuries has been stopped at the factory gate, may at last be finding its way indoors. Jefferson's hope that America would remain a nation of independent farmers was more than a sentimental pastoralism. He saw it as necessary to the maintenance of a durable democracy that the participants be financially and psychically independent—not "conditioned by their employment to habits of subordination." Jefferson believed that widespread economic independence through self-employment on the land was the best defense against a familiar tendency for democracies to degenerate into some form of tyranny. In spite of his passion for gadgets, Jefferson was very uneasy about the prospect of industrialization. He shared one historian's concern that it might "blunt people's imaginations and ethical sensibilities."

Now it appears, however, that through transformations in technology, we may simply have taken a long detour to transformations of ideals. We may now be able to achieve that vision—not as a nation of farmers, but as a nation of essentially autonomous, self-supervising, equal entrepreneurs, working within nonauthoritarian conclaves.

What does all this mean for research? I believe that it suggests some new research dimensions. First of all, we need studies of who is doing what, where, and with what apparent result. Education for entrepreneurship is evidently a rapidly growing field. The statistics of nonfarm self-employment began to rise in the seventies after a full century of decline and are still rising. We need to look more closely at qualities like initiative and imagination to learn how our approaches might be altered to nurture them best.

Even more important is the reduction of the emerging vision of a demassified work force to specific active terms. The first step, I believe, is a systematic effort to redefine the terms of employment. We need answers to a whole new set of questions. Macrae says that someday soon we will "pay people for modules of work done." To what extent is employment now being defined this way? In what fields are we paying people that way? What is the effect? Can reasonable comparisons be made? Is the work module method more productive, more cost effective, more satisfying? How can existing, conventional job descriptions be reshaped into work definitions?

Should we begin a continuing conversation with managers, production engineers, and accountants about the opportunities and problems involved as we look at work instead of jobs? What is the state of the art? Is the so-called "responsibility accounting,"which pushes the idea of "profit centers" deeper into the organization, a base on which we can build? Can the ideal of "management by objectives," already familiar in the executive suite, be extended to all employees? How might educational programs be modified to prepare people for entrepreneurially defined work? Can a word like "training" be properly applied to the preparation of people who will be self-supervising?

There are some larger questions. How can we redirect human resource training dollars to extend the school day and year, to give students time to make choices, to work together, and to share some common experiences?

Full employment will always be the central domestic concern in a specialized economy. However, as I stand here today, our approach to achieving full employment is changing drastically. Our response as educators is going to have to change just as quickly. The premises of a half a century are being put aside, and a search for a new approach has begun. It is a time of extraordinary opportunity for all of us in vocational education, if we are ready.

QUESTIONS AND ANSWERS

QUESTION: How do you train your students in entrepreneurship?

DR. FELDMAN: This is one of the major problems. Young people today see themselves differently than did my generation. We went to West Point to become generals to achieve recognition and prestige. They see themselves running their own free enterprises to be financially independent. The educational system, higher education in particular, is not fulfilling this vision.

When I arrived at FIT ten years ago, we did a three-year survey of the performance of our graduates, then a five-year survey, and finally a ten-year survey. About four years ago we discovered a sizeable pool of self-employed people among our alumni, so we created a center for self-employment, initially to deal with these people's immediate problems. We helped a number of people create small businesses, particularly minority businesses—without the assistance of the Small Business Administration. Education for self-employment is not enough. There must also be some access to venture capital, analagous, I suppose, to the placement function.

So, we initiated two electives on self-employment in business, and the courses were filled immediately. Then in every major, we included a course on how to sell your services. We place many of our students in jobs, and they go through executive training programs. But at some point, many of them strike out on their own. They may run a little store or a ski shop in Vermont, or they may freelance in pattern making or become production consultants.

Another thing we discovered, particularly from our minority enterprise program, is that entrepreneurship cannot be taught. Business skills and certain management skills can be taught, but not all people are ready to put in the commitment that is required to be an entrepreneur. We need entrepreneurial behavior in the corporate world as badly as we need self-employment for economic growth. Harnessing entrepreneurial behavior in the corporate world requires certain structural changes—profit centers for example—to give entrepreneurial employees a share of the profits they generate.

Many corporations are already moving in that direction, and others have always had profit sharing programs for employees. The self-employed entrepreneurs are a breed apart. They seem to put the business ahead of everything—even family. They get to work at 6:00 in the morning and quit at midnight. They have incredible drive. This is as true in the black community as in the white community. Not all people are entrepreneurs, but there are some in every community. It is important to recognize that. I do not believe you can teach the entrepreneurial instinct, but some research on the topic might help us understand it better. Right now, there are no educational programs to develop this trait more fully. I truly believe that many of today's dropouts, many of our discipline problems, are the result of our failure to engage that entrepreneurial impulse in the third grade or the college. We have just lately recognized its value.

Incidentally, there is a weekend college for entrepreneurs in Tarrytown, New York, run by Robert Schwartz, a self-made millionaire.

QUESTION: I think that your point about the incorporation of humanism is well taken, and that humanism is directly related to the quality of work life and life after work (after 5 p.m. and after retirement) and to the products of work. Based on this, do you see the administration of liberal arts and general education in terms of parallel tracks, or do you have a vision of their being interwoven with vocational education?

DR. FELDMAN: I have a vision. I think we are going to confront the problem of the separation of vocational education and general education when we recognize its cause. The problem is caused by a system that delivers federal dollars through a variety of management systems. As long as that multilayered and ill-defined system exists, we are going to have "turf" issues. In my state, for example, we have a marvelous system of schools. Each of the many technical schools and colleges offers automotive mechanics, fashion buying and merchandising, drafting, and so forth. This is totally redundant. It is happening because of that fragmented delivery system. I believe that sooner or later policymakers will have to face that issue.

We are going to have to realize that we can no longer raise state dollars through incentive programs. Now Washington may put a half billion dollars into vocational education and generate fifteen billion in matching state dollars. But there is a new approach in sight. A state assemblyman recently asked me, "Before you take that federal grant, what is this going to cost the state, Marv?" We in vocational education are going to have to alter our tactics.

We have a certain responsibility in vocational education to educate people as skilled artisans. America's most precious resource has been the technical skills of its people. We have lost our competitive edge in productivity to countries with fewer supporting resources than we have. Reclaiming the skills and productivity of the American people is essential.

For example, what has happened to the trade apprenticeship system in America? At FIT, year after next, we will create our first master's program—not a master's degree program, we already have that, but a master artisans program. We are hoping to reclaim the concept of master craftspeople, of master artisans.

QUESTION: How does organized labor fit into your discussion? It obviously grew during this fifty-year period.

DR. FELDMAN: I met recently with Chick Chaikin, the president of International Ladies Garment Workers Union, who said that we are getting a new breed of corporate executives and labor leaders who have some common perspectives. Both recognize that America's work force must be competitive in international trade. We cannot really deal with this issue on a political basis alone. Because of the devalued dollar, we are finding that it is cheaper to manufacture apparel, textiles, and even shoes in America than in Western Europe or in Japan. Then, on the other hand, we suddenly wake up to the fact that multibillion dollar industries such as the gift ware industry have no work forces. We can manufacture 2 million of almost anything profitably, but 2,000 dozen we cannot manage anymore. We do not have artisanship anymore. Labor leaders are quite willing to discuss this problem.

At FIT we have a model production center. We get all of the latest equipment as it is developed by Union Specialty, Singer, or Food Machinery. We have new adapters and other updating parts. We will run a line for any manufacturer, and show them how to increase productivity. Both labor and management seem willing to learn to produce profitably in smaller quantities. If we don't do it, someone else—the United Kingdom, Germany, Japan—is going to do it instead. I am talking about using the increased effectiveness of more highly skilled master artisans, not forcing less skilled workers to work harder for the same amount of money. We ought to find another word that avoids the negative connotations of "productivity." People in the AFL-CIO training programs understand this; they understand the need for master artisans.

The hidden problem is that we do not have an effective apprenticeship program anymore. In Pennsylvania there was a Westinghouse Trade School where they taught plumbing. After people went to that plumbing school for four years, they could thread, tap, and perform any other plumbing job. If they got into the union as apprentices, they had to repeat that course as part of their apprenticeship. There was no recognition of that preapprenticeship in qualifying for journeyman status. I wish someone in research would examine the apprenticeship system in the United States, where it is now, where it could be, and how it interfaces with vocational education.

QUESTION: Given what you have said about labor needs and small businesses, could you talk about the transfer of technology across these businesses?

DR. FELDMAN: There is a revolution in the transfer of technology. One of the most profound observations made recently is that because of technology, we can now bring work to the people instead of the people to the work. There is a Chicago bank that is now using computer hookups for home word processing clerks. These clerks may be women who have children and cannot get to the work place, so they are employed on a piecework basis and perform the work at home. The technology allows them to stay home with their children and still hold jobs.

This kind of technological change will breed new relationships. Ten years from now you may find small business persons grouping together to share pension plans and health and retirement systems. They are going to form group policies of their own. There is going to be a radical decentralization of enterprise and millions of tiny new businesses will form.

I do not believe that the associations that speak for industry speak for these new independent, self-employed entrepreneurs. The American Association of Retailers probably does not speak for the little haberdashery in your neighborhood. The American Association of Hotel Restaurant Managers does not speak for the local hash house. I think that there are going to be new organizations and their loud, clear rallying cry will be—freedom through self-employment. When I talk to my own graduates, they know they can, in time, get $50,00 to $75,000 a year at Wornoco or Levi Strauss, but they will settle for $20,000 a year if they know it was earned on their own initiative.

QUESTION: Do you see any evidence that the administration coming into office realizes that vocational education is an answer to the need for skilled labor? If they do not understand this, what can vocational educators do to convince them?

DR. FELDMAN: The American public and most people in vocational education have very little notion of how policies are created. We think that we send to Washington wise people who invent policies, when, in fact, a legislator's vote is a very specialized tool. Policies are made by the people. The race to create public policies is more important than who wins an election. I am deadly serious when I tell you this.

I have a very optimistic view today, not because I know anything about the inner circles of this new administration, or who the administration will select for key positions, or whether they are going to keep the U.S. Department of Education alive. I do not care who might have been elected, Democrat or Republican; the American people have rejected demand-side economics. In 1976 and 1977, there were re-capitalization bills and tax incentive bills being passed. The buzz word was reindustrialization. There is a shift in the mood of the country. The people are demanding change because their most nagging fear is still that there are not enough jobs to go around. Demand-side economics worked during World War II, but you cannot sustain an economy on deficit spending forever. Now demand-side policies seem to be creating unemployment. The people want a change, and they are going to see it. I have never been so optimistic about the future of vocational education as at this very moment, and not because there is a Republican majority in the Senate and a Republican president. It is because the American people are going to demand a change.

Students are already demanding it. FIT, at a time that was supposed to be a downturn in higher education, turned away 6,000 qualified applicants, and application rates continue to increase at a rate of 25 percent a year. There is not a vocational school I know of in America that does not have a waiting list. In New York City, we turn away 10,000 students from our vocational high schools every year, which means 50,000 people have been denied access to vocational education in the past five years, and many of them become CETA clients on eighteen-month contracts.

QUESTION: There is a need to serve special needs groups to promote equality. How do you think special interest groups are going to respond to a seeming neglect of their needs?

DR. FELDMAN: I do not think that the people who were supposed to be served under policies of equality of opportunity were actually served. There is a cynicism among the underemployed. On the other hand, I find in the corporate board rooms of America a new breed of managers. These are people who have a new vision of America; they have perception and sensitivity. There is an enormous change going on in the corporate world. These leaders are deeper and more literate than my own colleagues in academia. They really understand that in the future, the corporate world of America is going to have to be very involved with broader social issues. The best of them see that the transformation of the employment contract into performance terms is the ultimate expression of nondiscrimination.

The corporate world is moving toward entrepreneurially defined profit centers with new incentive programs and more humanistic management. It will soon become part of the terms of competition. Businesses that don't follow suit will not be in operation by the year 2000. The corporations can be trusted to recognize their economic self-interest, and if they are going to be competitive, they are going to have to create entrepreneur-defined employment with profit centers, with new incentive programs, and with more humanistic ways of dealing with workers as people, not as interconnecting cogs.

QUESTION: You seem satisfied that education, new technology, and entrepreneurship are things that lead to more jobs through small businesses, but the new wave in this country is toward conservatism. This seems to be a contradiction. This group is anti-small business. How do you reconcile these two attitudes?

DR. FELDMAN: If the young people now in colleges and universities who will soon be shaping policy are as interested in self-employment as they think they are (it would be interesting to find out how Ohio State University students envision their life-styles twenty-five years from now), then corporate behavior will have to change. I think the drive toward entrepreneurship is going to force a change in corporate behavior.

Incidentally, it is interesting to note that the competitive sector has no advisory council. They have a profit and loss statement instead. When it is on the loss side, they know they must change. They change because their economic well-being depends on it. Jesse Jackson taught this concept, and you will find more and more leaders understanding it. Leon Sullivan, at Opportunities Industrialization Centers, is understanding it in terms of the changes he is trying to bring about in some of the corporations of South Africa. All in all, I am more optimistic about change in the corporate world and the acceptance of entrepreneurship than I am of the delivery of services through the government sector.

QUESTION: The main issue of the supply question is that taxes must be cut to allow more spending. So public spending will be cut. I see this as cutting back on vocational education research. I see the priorities being put on energy research, for example, because the industry has problems and needs help. What is your opinion on how research can be applied to the supply question of labor for the economy?

DR. FELDMAN: I believe that there is going to be a redirection of federal dollars, but I believe it will be on the supply side, involving an enormous amount of vocational research. It is going to move from short-term to long-range research. We have to begin the work that must be done: rebuilding of our cities, recycling our resources, and solving our health problems. It is going to require more highly skilled, vocationally educated people. The research will be in the areas I have stressed as important: how do you redefine work to accommodate new employee attitudes, how do you make work more humane, and how do you release the energy of entrepreneurs? I expect a new research emphasis in these areas.

I may be wrong in my predictions. My colleagues all tell me there are difficult years ahead of us. Federal aid will be cut, schools and centers closed. I do not think the American people are going to tolerate this. Instead, I believe we must involve a different breed of economist, sociologist, accountant, manager, or vocational educator on a whole new range of issues.

QUESTION: You have spoken of how education must change to meet the needs of the entrepreneur, but if you look at unemployment rolls, they are made up of people who have little education or training. How do you see vocational education as serving these people?

DR. FELDMAN: We have to recognize that there is friction in our economy at the point where the work that has to get done is translated into jobs. There is a mismatch between the work and the jobs. That is because the whole approach has had a demand orientation. The theory was, if you put money into the economy, everything would adjust itself. The corporate world would find the people and train them, based on the demand. This has not worked.

What I see happening is the development of a new set of objectives: discovering new energy sources, rebuilding our cities, solving our environmental problems. For the first time we will look at the supply side of the labor equation, and see it as an unused resource waiting for a new kind of entrepreneurial leadership. We have to develop support systems for the small businesses that will create the jobs. How do we prepare the work force for those small businesses rather than for General Motors, Bethlehem Steel, or the giant corporate world that increase their profits through overtime work, increased productivity, and automation, but do not increase hiring capacity. We will have to restructure our approach. I worry more in New York City about little stores closing on Madison Avenue than about whether or not United Airlines is going to move to Dallas. We get excited when a new headquarters moves out of New York City that employed 300 people, yet we let little boutiques, which create more work, go bankrupt up and down Madison Avenue. In New York City, thousands of jobs are created by the small businesses while the great corporate giants create only dozens. Yet our whole support system is geared to the large corporation but not to small business. This insight has profound implications for future curriculum, instruction, and ways of dealing with the unemployed and the so-called economically disadvantaged.

There is a young man in New York City right now who runs a small business called the Guardian Angels. He probably knows more about the training of police workers than the John Jay College of Criminal Justice. We have to unleash such talent and get education programs really geared to train people for that kind of mission.

QUESTION: When you look around the U.S. Department of Commerce and other government agencies, you see that they are funding basic research, not innovative research or research that will help workers, management, and others in using these innovations. What are your suggestions?

DR. FELDMAN: In recent years, the best friend of vocational education, in my opinion, has been the United States Department of Commerce. For example, as fiber optics are developed and new communications systems become available, it will be recognized that the lack of a skilled work force is holding back their implementation. I have had a good dialogue with the Commerce Department on issues of the supply side—human resource needs and the need for particular skills. This recognition may very well translate into dollars for the kind of research we have been discussing.

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VOCATIONAL EDUCATION AS A PARTICIPANT IN THE ECONOMIC DEVELOPMENT ENTERPRISE: POLICY OPTIONS FOR THE DECADE AHEAD

Forces For Change

Planning strategies for vocational education are often identified through the annual plans submitted by education agencies to comply with the guidelines of federal, state, and local government funding sources. But in a more fundamental sense, planning involves looking ahead and anticipating changes in the larger society that can influence course offerings, enrollments, financial support, and careers for students in vocational programs. Such anticipation has become especially critical in the eighties, as the nation moves into an era where a changing population will take on greater importance in the evaluation of vocational education program performance.

In the coming decade, three major developments are seen as important factors for change in vocational education. They are as follows:

- Changes in the demographic profile and in retirement practices
- Regional shifts in economic activity and in employment
- Renewal of the industrial sector as a key ingredient in economic growth

State and local vocational education agencies will have to increase their adaptation to change as these developments increase in impact. More older persons will be enrolled in vocational programs. Vocational education also will become more involved with state and local economic development as the programs offered place a substantially greater emphasis on training persons to operate, maintain, and repair new and complex equipment. Because of their past involvement in both employability development and in adult, technical, and continuing education, vocational education agencies will be in a good position to respond to these changes.

A further consideration of these three developments can indicate the problems and opportunities they will create for the larger society, and their implications for change in vocational education planning.

Changes in the Demographic Profile and in Retirement Practices

Analyses of labor force changes in the seventies focused on the influx of women and sixteen- to twenty-four-year-olds into the labor market. Considerably less attention was given to another major development: the withdrawal of older men from the labor force because of earlier retirement ages. Inflation, greater life expectancies, and changes in public policy and social attitudes can be expected to reverse this trend of early retirement during the eighties. Older persons will become considerably more important in the market for vocational programs if their needs, and the need for sustaining enrollments in vocational education, receive priority in the coming decades.

In the past thirty years, there was a sharp decline in the percentage of men in their late fifties who remained in the labor force. This decline also shows up in the proportion of men sixty to sixty-four years of age and those over sixty-five who remain employed or who are looking for work. (See table 1.)

TABLE 1

PERCENTAGE OF MEN 60 AND OVER IN THE LABOR FORCE, 1947 to 1978

	Percent in Labor Force	
Year	*60 to 64*	*65 and over*
1947	–	48.0
1950	79.5	46.0
1960	78.0	33.0
1970	75.0	27.0
1978	62.0	20.5

SOURCE: Derived from *Employment and Training Report of the President.* Washington, D.C.: U.S. Government Printing Office, 1979, p. 236; and President's Commission of Pension Policy, *Variety of Retirement Ages.* Washington, D.C.: U.S. Government Printing Office, 1980; p. 7.

Shortly after World War II ended, nearly half of all men in the sixty-five and over category were in the work force. By 1978, only a fifth of the men in this age group were either employed or looking for work. But the most striking change occurred in the participation by men in the sixty- to sixty-four-year-old group. This shift was facilitated by the 1961 Amendments to the Social Security Act, which permitted retirement at age sixty-two with only modest reductions in benefits.

The propensity for men to retire at earlier ages received widespread support from business and labor. Employers came to regard retirement, especially early retirement, as an important aid in hiring and promoting younger persons. Such persons were assumed to be more productive and to possess more up-to-date skills than the older persons they replaced. Unions responded to technological changes and other changes threatening their members' jobs, with demands for generous and largely employer-financed pensions for their older members. It was assumed that older persons would prefer to retire if they were assured an adequate retirement income. Furthermore, unions coupled these demands with work guarantees for their younger members.

Since all parties concerned were assumed to benefit from such policies, they went through a series of successive liberalizations. The age at which persons could retire, with minimal losses in benefits, was gradually shifted downward by law, by collective bargaining, and by company policy.

Such a tendency would appear to be so firmly established that prospects for its reversal might be regarded as remote. Yet inflation, sharply rising retirement benefit costs, changes in the demographic profile, and the preferences of older people are all facilitating a shift in public policy and in personal decisions to retire. The shift is now toward encouraging older workers to remain in the labor force. Recent amendments to the Age Discrimination Act that outlaw mandatory retirement for most employees before age seventy symbolize these changes.

For Social Security and other federally funded retirement systems, inflation primarily affects program costs because it raises both wage levels and monthly benefit payments at the same rate as increases in the Consumer Price Index. Benefits in private pension systems, and in most state and local government systems, however, are seldom adjusted or "indexed" to keep pace with changes in the cost of living.

Inflation affects these systems primarily because it both increases the wage level on which benefit payments are based, and erodes the purchasing power of retired persons.

For the Social Security system, each percentage point increase in the Consumer Price Index has been estimated to add $1.1 billion in outlays for old age and survivors insurance benefits.[1] The role of inflation in diminishing the purchasing power of a pension that is not indexed to changes in the cost of living can be illustrated by projecting the purchasing power of a $1,000 a month pension granted in 1980 through 1995. The projection shows the losses in purchasing power if there is either a 5 or 10 percent average annual increase in the Consumer Price Index.

TABLE 2

PURCHASING POWER OF A $1,000 MONTHLY PENSION ASSUMING ALTERNATIVE RATES OF INCREASE IN THE CONSUMER PRICE INDEX, 1980-1995

	Purchasing Power in 1980 Dollars	
Year	*5 Percent Annual Price Increase*	*10 Percent Annual Price Increase*
1980	$1,000	$1,000
1985	780	620
1990	610	390
1995	480	240

SOURCE: *Social Security Bulletin,* November 1978, p. 1

With inflation averaging 10 percent a year, a pension that is not indexed would lose five-eighths of its purchasing power by the end of the fifth year. At the end of fifteen years, the loss would be slightly greater than three-fourths. The assumed ten percent inflation rate in this table is somewhat less than the comparable rates for 1979 and 1980. With a substantial reduction in the rate of inflation (say to 5 percent a year), slightly more than half of the original purchasing power represented by the pension would be lost by the fifteenth year.

Private pension plans now cover approximately half the labor force. State and local government plans cover several million more people. These pension systems, which often are coupled with Social Security benefits, have allowed many middle-class persons to retire in modest comfort. Yet because of inflation, employees depending on such pensions today will frequently postpone their retirement with the hopes of maintaining their income and building up a larger pension reserve for when they do retire.

For the federal government, outlays for retirement systems and other income supports amounted to $170 billion in the 1979 fiscal year. This represented more than a third (34.5 percent) of the federal government's expenditures in that year.[2] Efforts to restrain the growth in the federal government's budget in the eighties will include slowing down these massive outlays, thereby encouraging older persons to remain in the labor force.

Since a larger percentage of the population during the next decade will be older, inflation will have a greater effect on more people. Reduction of mortality rates, formerly concentrated on younger age groups, has come to characterize older persons as well. Improvement in the treatment of heart disease in the past twenty years is a good example. At the other end of the age spectrum, declining birthrates since the mid-sixties will sharply reduce the size of the sixteen- to twenty-four-year-old group in the population and in the labor force in the next ten years. (See table 3.)

TABLE 3

PROJECTED POPULATION GROWTH, 16 to 24 YEAR OLDS AND PERSONS 65 AND OVER, 1980 to 1990

Age Group	*Estimated Population (in millions)*		*Percent Change 1980 to 1990*
	in 1980	*in 1990*	
16 to 19	16.7	13.5	-19.0
20 to 24	20.9	18.0	-14.0
65 and over	24.9	29.8	+19.5

SOURCE: *Employment and Training Report of the President,* Washington, D.C.: U.S. Government Printing Office 1979; p. 353. Projections represent U.S. Census Bureau intermediate fertility estimates.

By 1990, these Census Bureau projections anticipate that there will be 5 million *more* persons who are age sixty-five and over. There will be some 6 million *fewer* people in the sixteen- to twenty-four-year-old age group. The bulk of the population and labor force increases will occur in the twenty-five to forty-four-year-old category: the "baby boom" generation of the two decades following World War II.

Labor force growth in the eighties will undergo a marked slowdown as fewer young people are added to the work force. Over three-fifths of the growth that *does* take place will be due to an increase of female employees.

As can be expected, the pressures to retire will diminish as fewer young people are added to the labor force. For persons over sixty-five who continue working, important issues will have to be resolved. These include, among others, the problem of fringe benefit costs to employers, the higher wage rates due to seniority for many older employees, and the frequent needs for further education and training to upgrade older employees' skills. Other problems will arise because older workers often prefer to work on a part-time basis, and on a more flexible arrangement than the forty-hour week or fifty-two-week year.

All these economic and demographic factors can be seen as strategic influences on the long-term labor force participation of older persons. The overall attitudes of older people who have retired or who are in the age group approaching retirement can be traced as influencing the decision to retire or to continue working. The Harris Survey for 1979, for example, reports the following:

- Forty-six percent of those already retired would prefer to be working.
- Forty-eight percent of the persons surveyed in the fifty to sixty-five age group with to continue working after age sixty-five.[3]

Evidence from the Harris surveys and related studies shows that older persons are seeking greater freedom of choice in their options to continue working or to retire, to retire or to return to school, to work full-time or part-time, to earn income from work, or to participate as volunteers.

The changes influencing population growth in the eighties will make it more difficult for all educational institutions to maintain enrollment. The decline in the population of young persons already has become apparent to high school and post-high school educators as enrollments have tapered off. In the absence of a dramatic increase in the percentage of traditional school-age students who choose vocational programs, demographic developments among the younger age groups indicate a prospect for serious losses in vocational education enrollments. The impact of the population decline in these age groups would be offset, and important economic and human needs served, if vocational education systems today undertake changes that will increase their appeal to new audiences.

There has been growth in the number of educational programs available to older persons. But in terms of enrollment, these individuals remain underrepresented in all educational programs, including adult and vocational education. For example, only 7 percent of the persons enrolled in courses through the adult education state grant programs in fiscal year 1979 were age fifty-five or older. This represents a decline from 12 percent in the 1966 fiscal year. The largest single group of enrollees in these programs in 1979 were sixteen- to twenty-four-year-olds. They made up over two-fifths (41 percent) of the enrollees.[4]

The limited information available shows that older persons make up an important *potential* audience for vocationally oriented programs. For example, a recent survey of "would-be learners" in the fifty-five- to sixty-year-old age group reported that vocational subjects were the leading preference among choices of study. (See table 4.)

TABLE 4

DISTRIBUTION OF "WOULD-BE LEARNERS" PREFERRED CURRICULAR CHOICES, AGE GROUP 55 TO 60

First Choice	*Percent Indicating Choice*
Vocational Subjects	30
Hobbies, Recreation	17
General Education	16
Home and Family	13
Personal Development	8
Religion	7
Other	9
Total	100

SOURCE: McNulty, M., and Palmer, M., *Educational Programs to the Elderly.* Menlo Park, CA: Institute for the Future, 1977, p. 26.

As you can see, vocational subjects were listed as a first choice almost as frequently as the next two leading categories combined. Such interest in vocational courses includes the interest of persons who regard the programs as preparation for a second career, or as an opportunity to upgrade obsolescent skills. The group also includes others who were seeking to acquire a useful repair skill such as auto mechanics, or a hobby such as woodworking.

In practice, the preferences of "would-be learners" are only partially reflected by the enrollment of older persons in educational courses. Recently the largest enrollments have been in subjects related to hobbies and recreation. Vocational programs that attract "would-be learners" in the future will have to have a different orientation than current programs. They need to concentrate on updating participants' interpersonal skills that have been in use in the past. Persons fifty and over typically have less interest in formal courses or degrees than young persons do. Individuals with years of work experience who are seeking new careers or part-time jobs require different guidance and placement assistance than young persons seeking entry into the world of work. Older persons often have work histories in declining industries or occupations, or their work skills have become obsolete because of technological change. Their opportunities for continued employment may depend on modifying or expanding existing skills to make them usable in different job contexts. Former typists, for instance, can be taught to qualify as work processors. A production foreperson ready to retire from the footwear or garment industry could build on managerial experience and acquire the skills needed in an expanding field, for example, in supervision of operations for a hospital laundry.

The vocational education system is strategically situated to make the shift toward serving nontraditional groups of students who wish to return to the labor market. The involvement of local vocational education agencies in adult and continuing education can supply the basis for attracting students in their fifties and sixties. The extent to which vocational education utilizes its potential for attracting these students in the eighties will depend on the steps taken by educational institutions to adapt their programs to the interests of older students.

Regional Shifts in Employment and Economic Activity

Regional shifts in employment and economic activity have caused slow growth in job openings in the northeastern and midwestern regions of the United States. Slow growth, and sometimes decline, has been especially characteristic of the older manufacturing states such as Michigan and Ohio. Yet there has been rapid growth in the southern and western regions. Vocational education systems can contribute to economic development in both rapidly and slowly growing regions. In the rapidly growing areas, local vocational education agencies can help to maintain the momentum of growth by increasing the supply of trained personnel for firms already in the area. This increased supply of personnel also will help to attract new firms. In the more slowly growing areas, vocational programs can contribute to development by providing trained workers to relieve specialized labor shortages that often cause employers to relocate. They also can provide trained replacements for shortages due to attrition losses in industries that are not expanding rapidly.

Regions with a high number of long established manufacturing plants have been characterized by below average employment growth in the past ten or fifteen years. The regions with more rapid increases in employment have been the areas where the introduction of manufacturing plants is a relatively new development. This relationship can be seen by comparing the percentage of the nationwide economic value added by manufacturing in different regions in 1976 with the percent change in employment from 1968 to 1978. (See table 5.)

The east north central and middle Atlantic states were responsible for nearly half (45 percent) of the manufacturing value added to the United States economy in 1976. Yet in both areas, percentage increases in employment during the period from 1968 to 1978 contributed less than a third of the total national increase in employment. The areas with the large percentage increases in employment (the mountain and west south central states) were responsible for only about a tenth of the total value added by manufacturing in 1976. This pattern is more a reflection of the decline in employment for old manufacturing centers than a reluctance to increase the importance of manufacturing in the economies of rapidly growing areas. These shifts help explain the lack of openings in the traditional, semiskilled blue-collar jobs in manufacturing that once provided entry level positions for many young people in the northeastern and north central states.

Such regional patterns of employment and economic growth have been reflected in a similar pattern of regional migration. The northeastern and north central states have lost population in the migration, while the southern and western states have been gainers. (See table 6.)

TABLE 5

PERCENTAGE OF TOTAL VALUE ADDED BY MANUFACTURING, 1976, AND EMPLOYMENT GROWTH BY REGION, 1976 TO 1978

Region	*Percent of Total Value Added by Manufacturing in 1976*	*Percent Increase in Employment — 1968 to 1978*
All Regions	100.0	24.3
New England	6.2	16.4
Middle Atlantic	17.8	8.7
East North Central	27.5	15.4
West North Central	7.0	27.4
Mountain	2.3	57.9
Pacific	11.7	34.5
East South Central	6.1	23.8
West South Central	8.6	40.2
South Atlantic	12.8	31.7

SOURCE: U.S. Department of Labor, *Monthly Labor Review*, March 1980, p. 14; *Statistical Abstract*, 1978, p. 800.

TABLE 6

PERSONS MOVING TO AND FROM EACH MAJOR REGION, 1973 TO 1976

	Migrants (in thousands)		
Major Region	*into region*	*out of region*	*Outmigration as a Percentage of Immigration*
Northeast	1,058	1,829	173.0
North Central	1,935	2,400	124.0
South	3,254	2,407	74.0
West	2,106	1,718	81.5

SOURCE: "Youth Labor Force Activity," *Monthly Labor Review*, March 1980; p. 15.

While some persons move for noneconomic reasons such as the desire for a change of climate, the primary reason for relocation has been due to employment and economic opportunities. Such regional migrants, on the average, have been younger and better educated than the nonmigrants. The tendency for young, educated persons to migrate to the South and West adds to the factors facilitating the development of high technology manufacturing industries in these areas.

These regional shifts have been accompanied by similar changes in economic activity and employment in the larger cities within the regions. Eroding industrial bases, with corresponding losses in population, have been characteristic of the larger cities of the Northeast and Midwest from Boston to St. Louis. Correspondingly, there have been large gains in population and manufacturing jobs in large cities of the South and West, such as Phoenix and Houston. These patterns of central city decline/growth have been partially associated with the regional shifts. But they also stem from the movement of population and economic activity to the suburbs. The overall effect of both of these factors has been to make older central cities into concentrations of unemployed and disadvantaged persons with limited job opportunities in their skill areas, the manufacturing industries. (See table 7.)

According to table 7, all of the "growing" cities are in the South and West. (Honolulu is included in the U.S. Bureau of the Census' West region, although it is outside the continental United States.) All of the declining cities, except Baltimore, are in the northeastern or north central regions. Baltimore, of course, is a border city, and its economic makeup more closely resembles the old manufacturing and port cities of the Northeast rather than southern cities such as Atlanta or Houston. While part of the population gain of growing cities is due to the annexation of surrounding suburbs, the increases primarily represent growth in population for reasons other than an expansion of city boundaries.

Many important national issues are involved in both the regional shifts and in the growth and decline of the large cities. The older regions can expect a loss of political influence as population losses lead to a reapportionment of congressional seats. The newer regions will gain political weight for the same reason. Labor unions will often face difficult problems as employment either grows slowly or declines in the older regions and in industries that comprised their membership base. In contrast, in many areas where unions historically have been weak, employment will be growing rapidly. National policy will be viewed increasingly from the perspective of its anticipated impact on the fortunes of different regions. For instance, the decision of the recent administration to permit more generous depreciation allowances for building new plants can be expected to hasten some firms' decisions to move from the Northeast to the South. Because of these tax writeoffs, such moves will be less costly than they otherwise would be. National policy for unemployment is faced with the alternatives of encouraging the movement of people to where the growth in jobs is taking place, or undertaking measures that would increase available jobs in cities with high unemployment rates.

Such regional and urban shifts also will present problems and opportunities for local vocational education agencies. In rapidly growing areas such as Phoenix and San Diego, any enrollment declines due to falling birthrates in the past fifteen years will be offset at least partially by the effects of rapid population growth. In the older cities, enrollment losses due to the decline in birthrates have been augmented by the movement of many families, especially young families, to the suburbs or to the more rapidly growing regions.

Vocational education systems in both the slow and rapidly growing regions can enhance their prospects for growth if they become active participants in state and local economic development efforts. These include efforts by government agencies, local chambers of commerce, and similar organizations.

TABLE 7

POPULATION CHANGE AND CHANGE IN EMPLOYMENT IN MANUFACTURING, GROWING AND DECLINING CITIES, SELECTED YEARS, 1970s

City	*Region*	*Population Change 1970-1980 (in thousands)*	*Change in Manufacturing Employment, 1972 to 1977*
Growing Cities:			
Dallas	South	+ 52	+ 5,500
Honolulu	West	+ 131	–0–
Houston	South	+ 273	+ 39,400
Los Angeles	West	+ 138	+ 35,500
Phoenix	West	+ 192	+ 6,000
San Antonio	South	+ 75	+ 3,900
San Diego	West	+ 173	+ 8,200
Declining Cities:			
Baltimore	South	- 123	- 17,900
Boston	Northeast	- 79	- 8,100
Buffalo	Northeast	- 106	- 6,800
Chicago	North Central	- 400	- 64,600
Cincinnati	North Central	- 70	- 3,800
Cleveland	North Central	- 178	- 10,400
Detroit	North Central	- 322	- 27,100
Milwaukee	North Central	- 84	- 14,900
Minneapolis	North Central	- 64	- 5,900
New York City	Northeast	- 880	- 147,800
Philadelphia	Northeast	- 270	- 45,100
Pittsburgh	Northeast	- 96	- 7,000
St. Louis	North Central	- 174	- 3,600

SOURCE: Kamer, Pearl. "Municipal Finance: How Deep the Crisis." *Metropolitan Economic Association,* mimeographed report, 1981.

One of the factors emphasized by many development agencies in seeking new industry for their areas has been the availability of a labor supply that possesses the skills required by the new firms. These skills often include use of the new technologies in computers, microprocessors, and similar applications of automation to industry. Development programs in other areas will focus on advanced technologies to obtain energy from sources that were not economically feasible when oil prices were lower. Instances include extracting oil from shale rock, or shipping coal by pipeline slurry. Economic growth in energy resource regions will in turn lead to an expansion in the business and consumer service industries that will require many employees trained in technical and business skills. Vocational education agencies in high growth areas can provide the trained personnel to utilize the more complex technologies, or to provide the business and consumer services that usually accompany growth.

In the more slowly growing areas, local economic development agencies will seek to strengthen and build on the healthy economic cores that these areas typically possess. The recent growth in business services, international finance, and tourism in New York City illustrates this type of development. Growth in finance and tourism in this city has created many jobs in data processing, administration, travel and recreation, and business machine repair. Revival in financial, legal, and other business services also has meant revival in related industries, in printing and publishing, or in construction. In the past, many of the more desirable jobs in these fields were held by commuters because local residents lacked the skills to fill them. City-based vocational education agencies can train many local persons who would otherwise be bypassed by growth in the central cities.

In both high and low growth areas, vocational education programs should continue to serve disadvantaged groups by providing them with employability skills. The unemployment rate for blacks and other nonwhites, for example, was approximately double the white rate of unemployment in both high and low growth areas. In Houston and Dallas, for example, the unemployment rate for whites in 1979 was between 2.9 to 3.6 percent. Unemployment rates for nonwhites in the two cities were in the 6.4 to 6.9 percent range.[5] Continued efforts by vocational educators will help to reduce such gaps.

Vocational education agencies have historically concentrated on local area labor markets in planning their programs for career opportunities and personnel needs. This local labor market has frequently been identified with the political jurisdiction served by the educational system—usually a city. Such planning methods assume that graduates will obtain employment primarily in the local political unit. It also assumes that schools have a special obligation to serve the local area that provides the bulk of their funds. Recently, this approach has lost a great deal of its validity, and it is likely to lose more in the coming decade. Local labor market concerns now extend far beyond the city's political borders, as employers and jobs have moved to the suburbs and beyond. In many fields, particularly those that require specialized post-high school education, the relevant labor market has become regional or national in scope. Planning in vocational education can serve students, employers, and the nation more effectively by encompassing regional and national opportunities, as well as local career opportunities, in developing their programs.

Strengthening the Industrial Economy

A combination of high inflation rates, high unemployment rates, and slow productivity growth rates has characterized the American economy for the past five years. Considerations growing out of such "stagflation" have become an important influence for change not only in national policy, but also in economic policies intended to revive the economy's industrial base. These developments will have many implications for vocational education planning in the eighties. While they will increase career opportunities in technical and service fields and in new growth industries, they will reduce opportunities for semiskilled factory operatives. Such developments also will change job profiles in other industries.

The American economy has been undergoing major structural changes since the seventies. These changes will continue, and probably accelerate, in the eighties. Some industries, primarily those involved in energy and high technology fields, have been expanding rapidly. The regions in which they are concentrated, mainly in the "Sunbelt" states, have likewise become high growth areas.

The industries that have been experiencing slow growth or decline include many of the old manufacturing industries in which the United States was the world leader. These industries include automobiles, steel, rubber, consumer electronics, and selected nonmanufacturing industries such as railroads. The slow growth regions in the past decade have been the areas, mainly in the Midwest and Northeast, in which these industries are concentrated.

Losses to foreign competitors such as Japan or West Germany have highlighted the problems of the United States' old manufacturing industries. Japan, for example, has become the world leader in automobile production and in the production and utilization of industrial robots. And while productivity levels per hour worked have been higher in the United States, productivity level *growth* frequently has been higher in other countries. Continuation of these productivity growth differentials for another five or ten years will mean that foreign productivity levels (output per hour worked) will reach or exceed the levels in comparable American industries. Two types of growth—slow productivity growth in the United States, and the more rapid productivity growth in other nations—are summarized in table 8.

TABLE 8

ANNUAL AVERAGE PERCENT CHANGE IN OUTPUT PER HOUR, MANUFACTURING INDUSTRIES, SELECTED NATIONS, 1970 TO 1979

	Annual Percent Change	
Country	*1973 to 1979*	*1978 to 1979*
United States	1.4	0.8
France	4.8	4.7
West Germany	5.3	5.2
Japan	6.9	8.1

SOURCE: U.S. Department of Labor, *Monthly Labor Review,* December 1980; p. 33.

The growth rate in output per hour in manufacturing in the United States during the 1973 to 1979 period was about a fifth the comparable growth rate in Japan. It was slightly more than a fourth of the increase in West Germany, and somewhat less than a third of the growth rate in France. In the most recent years of the 1973 to 1979 period (1978-1979), output per hour in American manufacturing industries increased at an annual rate of less than 1 percent. The increases in France and West Germany remained near their overall 1973 to 1979 levels in this period, while the percentage growth in output per hour increased in Japan.

Slow productivity growth, accompanied by substantial increases in wage rates and fringe benefits, has translated into rising labor costs for many manufacturing industries. This development has encouraged a manufacturing shift from the United States to other nations. Furthermore, multinational corporations have facilitated the development of manufacturing "export platforms" in places such as Hong Kong, Malaysia, Mexico, South Korea, and Taiwan. Electronics manufacturers in the United States, for example, frequently have components assembled in these countries. The new American "world cars" contain parts drawn from American subsidiary plants in Brazil, Mexico, Spain, and other countries.

Quality control considerations also have been a factor in the loss of U.S. export markets to foreign competitors. For instance, Japanese exports of semiconductors to the United States rose from $20 million in 1973 to over $250 million in 1979. One reason for this rapid growth was that rejection rates for the Japanese-produced units were one-half or less than the comparable rate for domestically produced equivalents.[6]

All of these developments have been directly or indirectly accentuated by the steep increases in U.S. energy costs since 1973. In many older industries, escalating energy prices have made plants and equipment obsolete because their use requires large quantities of energy.

Within the United States, the response to foreign competition, slow productivity growth, rising labor costs, and high energy costs has been to engage in large-scale capital outlays to restructure industrial plants. These capital outlays are intended not only to increase productivity, but also to produce products that require less energy. The automobile industry is a leading case. General Motors, for example, anticipates spending some $40 billion in the coming decade to build new plants and reequip existing plants to reduce costs and to produce a new generation of smaller, more fuel efficient motor vehicles.[7]

These massive capital outlays frequently will introduce a more complex production technology involving the use of automated and computerized processes. Industrial robots supply a good illustration of the new technology.[8]

The Institute of Robotics estimates that in 1980, some 3,200 industrial robots were in use in the United States. Their main uses have been in the automobile industry or in foundry-type operations. They also foresee the possibility that robots will become a $2 billion a year industry by 1990.[9]

Robots in the automobile industry are used primarily in painting and welding automobile bodies. General Motors, for example, plans to add 2,000 more robots to its assembly lines by 1983. Future projections for the company envision as many as 14,000 robots in use by 1990.[10]

Such long-term prospects for robots point to their use for advanced, computerized systems that both design equipment and direct production. The robots that will figure in these computerized design and manufacturing systems (CAD-CAM) will be programmable—thus they will have the capacity to sense and react to their environment as well as to perform repetitive operations. Robots represent one important example of the new, rapidly expanding high technology processes that are organized around the use of microprocessors and computers. Use of such technology has mushroomed as the costs of computing have declined. For instance, the cost of storing one unit or "byte" of information in a semiconductor memory chip fell by 98 percent in the past ten years.[11] Much of the capital outlay in restructuring the nation's manufacturing plants will make use of "smart" machines involving the new microprocessor technology. In the next two decades, these applications of scientific knowledge are likely to be joined by far-reaching applications of biological research in genetic engineering. The General Electric Company, to cite an instance, has received a patent for developing a species of bacteria that can help clean up oil spills by consuming the oil.[12]

In the eighties incentives to use advanced, computerized technologies such as robots will stem from the improved quality control and increased productivity that the new technology makes possible. For example, a General Motors spokesperson noted that traditional methods for painting automobile bodies retained only 30 percent of the paint actually sprayed on the vehicle. The rest was either lost in powerful exhaust systems that protect workers from paint fumes or in other systems. By programming robot sprayers, it is now possible for General Motors to retain more than 50 percent of the paint on the cars.[13]

Beyond their technical advantages, robots cannot join unions, go out on strike, take coffee breaks, become alienated from work, or require environmental, health, and safety protections to reduce hazards in the work place.

New technologies will continue to appear and will probably accelerate the slow growth or declines in employment opportunities for semiskilled workers in manufacturing industries. This tendency is illustrated by the experience of the automobile industry since the end of World War II. In 1948, some 713,000 auto workers in the United States and Canada produced 5.96 million automobiles, trucks, and buses. In 1978, 839,000 auto workers produced nearly 14.26 million motor vehicles.[14] Seventeen motor vehicles were produced per automobile worker in 1978 as compared with a little more than eight vehicles in 1948. Developments similar to those in the automobile industry have led to considerably slower growth in employment for production workers in manufacturing than for workers in other nonagricultural occupations. (See table 9.)

TABLE 9

TOTAL NONAGRICULTURAL EMPLOYMENT, AND EMPLOYMENT FOR PRODUCTION WORKERS IN PRIVATE MANUFACTURING, 1948 TO 1979

Year	*Total Nonagricultural Employment (in millions) (1948 Index=100)*		*Employment for Production Workers in Manufacturing (in millions) (1948 Index=100)*	
1948	44.9	100.0	12.9	100.0
1960	54.2	120.7	12.6	97.5
1970	70.9	157.9	14.0	108.8
1979	89.5	199.4	15.0[3]	116.3

SOURCE: Adapted from *Employment and Training Report of the President,* Washington, DC: U.S. Government Printing Office, 1980, pp. 305-306. Figures listed refer to payroll employment.

Total nonagricultural employment nearly doubled in the generation after World War II. Jobs for production workers in manufacturing increased by about one sixth. During the seventies, the overall nonagricultural employment grew by 18.5 million workers. The comparable increase for production workers in manufacturing was 1 million. The lack of substantial manufacturing job growth in the seventies has made it difficult for the economy to absorb the large number of women entering the labor force and the "baby boom" generation born in the later 1950s or early 1960s.

Greater capital outlays for more complex technologies in the eighties are intended to bring about a renewal of the industrial economy without a comparable increase in requirements for semiskilled and unskilled blue-collar labor. Furthermore, many of these capital outlays are designed to decrease labor requirements.

The displacement that will be created by computerized technologies will be concentrated in one occupational group: semiskilled operatives. Over three-fourths (77 percent) of the 11 million persons employed as operatives in 1979 (excluding operators of transportation equipment) were at work in manufacturing industries. Jobs that are created by increased capital investment will be concentrated in professional, technical, and skilled areas; in designing and producing equipment, or in operating, maintaining, and repairing it. Few of these positions could be filled by a displaced automobile worker, for example, without a good deal of additional training.

Although economic concerns have focused on renewing the industrial base, the bulk of the job growth in the eighties is expected to take place in service industries. In addition, there is a rapidly growing yet often ignored service sector in manufacturing industries made up of persons who will provide data processing, financial, legal, public relations and advertising, and other business services. Many of these service firms also will be introducing microprocessor technology and other related advances. However, growth in these industries is expected to be rapid enough to more than offset the displacement effects of new technology. These patterns of job growth are illustrated by the U.S. Bureau of Labor Statistics projections of employment growth by industry between 1977 and 1990. (See table 10.)

TABLE 10

EMPLOYMENT FOR SELECTED MAJOR INDUSTRIAL SECTORS, 1977 NAD PROJECTED 1990

Sector	*Employment (in millions)* *1977*	*Projected 1990*	*Percent Change* *1977 to 1990*
Total Civilian Employment	93.7	118.6	26.6
Manufacturing, Transportation,	19.8	23.9	23.0
Public Utilities	4.8	5.7	16.9
Wholesale and Retail Trade	20.9	27.4	30.9
Finance, Insurance, and Real Estate Services[1]	4.9	6.7	37.0
Services[1]	17.7	26.7	51.3

SOURCE: *Employment and Training Report of the President,* Washington, DC: U.S. Department of Labor, 1979; p. 362.

1. Excluding private household workers

The U.S. Bureau of Labor Statistics' projections foresee a future in which employment in manufacturing will grow more slowly than total employment. The growth in manufacturing employment will represent the combined effects of slow growth in the older manufacturing industries and more rapid growth in the new high technology industries. Three-fifths of the overall increase is expected to take place in two economic sectors: service and trade industries.

Unanticipated changes in the projections, such as rapid development of new energy sources, could create even larger increases in employment for energy industries and manufacturing industries that are heavy users of energy. But the predominant theme in the projections is a continuation in the shift to a post-industrial society as the major factor affecting employment in the eighties.

Most cost-saving figures for the use of new technology represent the savings that result from continuous operation. Industrial robots, for example, are currently estimated to involve an initial unit capital outlay in the $70,000 to $80,000 range.[15] Much of the savings anticipated from the investment would be lost if the machines were frequently out of use because of the need for maintenance and repairs.

In the introductory phases, repairs to complex equipment such as robots are often made by the "superstars," or persons with graduate degrees in science or engineering. Later on, the responsibility falls to specially trained technicians and mechanics.

Accordingly, the emphasis on industrial renewal in the eighties will place new and greater demands on vocational education systems. For example, courses in electronics will provide the basic foundation for training in the fields related to the new technology. The level of complexity involved in automated technologies suggests that the bulk of the training will be given in post-secondary institutions. Many of these institutions already have extensive expertise in electronics technology. Work-study and cooperative education programs can be effective ways to give students a working familiarity with industrial advances.

Yet vocational programs in the secondary schools can arouse student interest by providing basic training and employability development courses that familiarize students with the work world. These programs will be able to serve as a basis for later, more specialized training in industrial settings.

So far, the high cost of equipment required to train persons in the new technology has kept private schools from assuming a major role in training. None of the member schools of the National Association of Trade and Technical Schools, for example, offer courses in robotics. Yet it is likely that equipment costs will decrease with a greater volume of production. A reluctance by public vocational institutions to train persons for the jobs that will grow out of industrial revival will have the effect of encouraging private institutions to take on a larger role in this field.

In the past, there has been great emphasis on the need to identify new occupations that might be suitable fields for vocational training programs. Robots and related technologies illustrate another tendency: changes in job content in existing occupations as a response to technological advances. Changes in the content of machinists' jobs, resulting from the introduction of numerically controlled machine tools, illustrate this development. In the coming decade, the job content of many electronic technicians' jobs will include a working knowledge of advances in fields such as robotics. Programmers and designers will discover their job skills undergoing change with the more widespread integration of computer assisted design and manufacturing.

Vocational education systems, like other institutions, must adapt to change if they are to serve their students, the larger society, and their own need to grow. Planning in vocational education can supply an early warning system for increasing sensitivity to changes that will require a response by vocational educators. Priority factors for renewing the nation's industrial base, such as demographic changes and regional populations/manufacturing shifts, illustrate the long-term developments that will figure prominently in the agenda for vocational education planning.

NOTES

1. U.S. Congress, House of Representatives, Committee on Ways and Means. *Options for Financing Social Security Programs* (Washington, DC: U.S. Government Printing Office, 1979).

2. For an analysis of these outlays, see Leonard Lecht, *Expenditures for Retirement and Other Age Related Programs: A Major Shift in National Priorities* (New York: Academy for Educational Development, 1981).

3. Louis Harris and Associates, *1979 Survey of American Attitudes Toward Pensions and Retirement* (Washington, DC: Louis Harris and Associates, 1979).

4. National Advisory Council on Adult Education, *A History of the Adult Education Act* (Washington, DC: U.S. Government Printing Office, 1980), p. 35.

5. U.S. Department of Labor, Bureau of Labor Statistics, *Geographic Profiles of Employment and Unemployment, Report 619* (Washington, DC: U.S. Government Printing Office, 1980), p. 9.

6. U.S. Congress, House of Representatives, Committee on Science and Technology, *Seminar on Research Productivity, and the National Economy,* No. 127 (Washington, DC: U.S. Government Printing Office, 1980), p. 49.

7. *Wall Street Journal,* 3 February 1981.

8. For an analysis of the implications of the utilization of industrial robots, see R.U. Ayres, *A Preliminary Technology Assessment: Industrial Robots and CAM* (Pittsburgh: Carnegie-Mellon University, 1980).

9. *Wall Street Journal,* 28 November 1980.

10. *Business Week,* 1 June 1981, p. 98.

11. *Business Week,* 1 June 1981, p. 96.

12. *Business Week,* 16 March 1981.

13. *Wall Street Journal,* 3 February 1981.

14. Research Department, United Auto Workers Union, *Memo* (Detroit: United Auto Workers Union, 20 October 1980).

15. *Business Week,* 9 June 1981.

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THE REINDUSTRIALIZATION OF THE UNITED STATES: IMPLICATIONS FOR VOCATIONAL EDUCATION RESEARCH AND DEVELOPMENT

Permit me to plead guilty to using this paper as a "stalking-horse," masking other purposes. I intend not only to deal with issues that are critical to our nation's reindustrialization problems such as unemployment, low productivity, inflation, and inadequate economic growth but also with our penchant for nonsensical rhetoric that we substitute for plain talk and common sense.

Does anyone here really believe that a nation with the highest output per employee, a multitrillion dollar GNP, the largest volume of petrochemicals, computer products, aircraft, and communications equipment exports in the world is really in the process of completely rethinking and redoing its industrial base? The prefix re means to do again. Just what is it we are supposed to be doing again?

The fact that steel, autos, and other industries are in deep trouble is no reason for this search for a national mea culpa and frenetic flailing about as though we are among one of the underprivileged, underdeveloped countries of the world.

We are indeed in trouble. Though our current output per employee hour is the highest of all the major industrial nations in the world, our low rate of productivity gain during the last decade will ensure losing our number one position by 1986. We have much to do, and we had better start doing it soon; but catchy and meaningless phrases, such as "reindustrialization" or "zero sum game," do not really get at our basic problems or stimulate rational measures. They certainly do not separate the wheat from the chaff.

To mention firms like Texas Instruments and Chrysler Motor Company in the same breath is to get some sense of the broad spectrum of efficiency to incompetence that exists in our economy. While the world looks to our oil-rig manufacturers as unsurpassed in excellence, it finds our steel industry to be a pale reflection of its former position of superiority. The fact that such differences exist is not new. The body economic is a dynamic, ever-changing multiplicity of cells, components, and appendages.

Such factors as tax policy, spirit of risk, managerial effectiveness, rates of innovation, research and development, and human resource training and education are of significance to each industry, but in varying degrees. Only by a careful, rational evaluation of such factors as they apply to each industry and to companies within an industry, can we determine how to improve economic performance.

There are, however, a few factors that are of generic importance to a nation's performance. It was not by error that the first hundred or so pages of Adam Smith's *Inquiry into the Nature and Causes of the Wealth of Nations* deals with labor. Smith saw as key to the wealth of any nation a well-trained, specialized labor force. It was so in 1776, and it is so in 1981.

The miraculous performance of the economy of Japan has taken place on an island with no oil, coal, timber, iron ore, copper, cotton, wool, wheat, soy beans, or cattle to any real degree. Its one great resource is a trained, motivated labor force, managed with great skill and daring.

The Japanese, West Germans, French, and most nations in Western Europe have embraced, not merely accepted, the philosophy of the necessity to invest in human resources. To build and maintain an up-to-date labor force is essential for a technology-oriented nation. Our unwillingness to understand the need to invest in major training and education efforts in order to service the skill needs of our private *and* public sectors has begun to move us toward a possible catastrophe.

Not only is there an apparent lack of concern over this situation, but there also is no evidence of an awareness of the key relationship between our inadequate investment in human resources and our problems of inflation and productivity. In every one of the major industrialized countries of Western Europe, as well as in Japan, there are *three* factors that are seen as being key to dealing with inflation and productivity. Fiscal, monetary, and human resource policies are seen as forming a simultaneous equation, necessary to deal with the problems of inflation and productivity.

This is not to say that the Germans, British, Belgians, French, or Japanese do not have problems of unemployment or inflation. They do. But their rates of unemployment and inflation have been far below ours, while their productivity rate increases each year have been vastly greater than ours. For example, the European rates of unemployment are about 50 percent less than ours, their rates of inflation are far below ours, and productivity is 400 to 600 percent higher. But the availability of a constantly upgraded labor force is considered essential.

In Europe, the West Germans have led the way since 1963, when they enacted a law establishing the right for every German citizen, whether employed or unemployed, to as much as two years retraining for a higher skill, with all costs paid *plus* a stipend that is inversely related to the last income. In the lower-income brackets, the stipend is almost 100 percent of the last salary. The French copied the concept of this program, with some variations, in 1971, and the British in 1974. The Swedes and Danes have had similar programs for many years before 1963.

The Japanese have a different type of human resource investment approach. The government assumes very little responsibility for dealing with unemployment, vocational training, or upgrading of the labor force. With a very different cultural orientation, no pun intended, the private sector assumes a unique set of responsibilities. Thus, in Japanese industry, the tradition of life-long employment can work only because of the assumed responsibility by management to provide for continuous retraining of all employees, especially as new production techniques and new product lines are introduced as part of industrial growth.

This managerial philosophy is based on an economic rationale as well as a cultural tradition. Modern Japanese management has found that it makes sense to view labor as a "fixed cost." That is, no matter what the new technology, a skilled, trained labor force is necessary. Why not retrain (while providing job security) rather than lay off or fire and then attempt to hire a new group of employees? There is no better way, in fact, to obtain quality work and organizational loyalty.

The Japanese approach, which is found in all of its major corporations and most of the medium-sized firms, is contrasted by Nakane[1] when he compares the American philosophy of employment with that in Japan:

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[1] Chie Nakane, *Japanese Society* (Middlesex, England: Penguin Books, 1973), pp. 18-20.

> Here is demonstrated a radical divergence between Japan and America in management employment policy: A Japanese employer buys future potential labour and an American employer buys labour immediately required. According to the Japanese reasoning, any deficiencies in the current labour force will be compensated by the development of maximum power in the labour force of the future; the employer buys his labour material and shapes it until it best fits his production need. In America, management buys ready-made labour.

The Japanese approach, which also is found in many European countries, has major implications for a number of our labor force problems. Matching new jobs and calling for new skills can be handled within the firm if that organization ensures that it has the raw materials it can train (or have trained). This is more efficient than if the firm must always rely on placement services, inadequate resumes, or misleading or mistaken past work histories. It certainly can help to provide the basis for a more equitable use of the company's available work force, both on a sex basis and a skill basis. In an article concerning this subject, Ronald Dore[2] states that the Japanese firm "considers itself to be buying, not a skill, but a lifetime's work."

In essence, such countries as I have mentioned see labor as a form of capital in which it makes sense to invest—and re-invest—in order to lower unemployment, increase productivity, and lower inflation.

Our view is, as you know, quite different. We still are captive to the unemployment insurance compensation philosophy of the Great Depression; namely, help workers for a limited period of time after they have lost a job, with about 35 percent of their former pay, and hope that they will get work after a while. For the young unemployed who have not been in the work force the minimal number of quarters to qualify for unemployment compensation, we come up with a limited number of public service jobs or a limited number of training opportunities. The public service jobs have to be appropriate for the low level skills and poor reading levels possessed by many if not most of these young people, so there is no real training involved. Indeed, until very recently, the CETA training titles accounted for much less than half of all CETA funds. When the situation begins to get bad, really bad that is, we start to hear about major new youth employment or training programs. These "major new programs" eventually dwindle as the crises that triggered them subside, but the basic problem of underinvestment in vocational and skill training remains.

What happens, unfortunately, is this: Not only do we fail to deal with the fundamental problem, we even try to change our definition of the problem. For example, since 1970 we not only have changed our definition of what we call acceptable levels of unemployment, but we also have looked into the question of whether we are computing properly the level of unemployment.

Until 1970 we were able to achieve levels of unemployment below 4 percent. It may be hard to believe, but during the period 1966-69, the unemployment rate was between 3.5 percent and 3.8 percent. During the mid-sixties, the accepted norm for unemployment in the United States, as it had been since the early fifties, was around 3 percent. Around 1970, the number that showed up more frequently was 4 percent. During the last five or six years, we have been told that perhaps a new norm of 5 percent should be set. Now the reason for these shifts in the "normal" level of unemployment has in no way been justified by any real rationale or research. The basis grows out of that old motto, "If you can't beat them, join them."

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[2] Ronald Dore, *British Factory, Japanese Factory: The Origins of National Diversity in Industrial Relations*
2. (London: George Allen & Unwin, 1972), pp. 111-112.

With regard to the question about the unemployment data and the possibility that these data might, it is hoped, be causing an upward bias (overestimation) in the unemployment statistics, an interesting ploy was attempted during the last couple of years. A presidential commission, headed by Sar Levitan, was established to look over the ways in which we gathered—and still gather—our unemployment data and determine whether these procedures still made sense. This commission finally concluded that the data, and data-collection techniques, are pretty much acceptable. No help there. Indeed, there *can* be no help as long as the officials responsible do not accept the fact that our basic approach to unemployment problems is fundamentally wrong and that we simply have to adopt a new one to deal with the realities of the world since the last sixties—rather than pre-World War II. For those officials who do not know this (and some do), there is a real stress problem, with which I would not like to live. They know that to move toward a really modern labor force, one that has a truly comprehensive approach such as those in Western Europe or Japan, we have to—

1. admit that what we have been doing since 1970 has been wrong;
2. admit that we have at least fooled the public, if not ourselves;
3. admit we have ignored valuable, applicable experiences of other major industrial countries;
4. tell people that the newer models of labor force programs will cost more, but will yield far more in return;
5. lay ourselves open to the accusation that we have played politics with an overwhelmingly important economic matter, and we have cost the economy billions in lost output, lower productivity, and unemployment benefits paid out.

Now for those economists and public officials who are confronted by that damnable list, we do not have to be mind-readers to know what choices will be made: more of the usual unemployment program band-aids. For the psychologists in the audience, we are confronted with a classical case of "double-avoidant conflicts." In such instances, we know what happens, at least in government. I think the following quote from a good text in psychology forecasts, as well as explains:

> The individual tends to maintain his (or her) existing attitude structure not only because it provides his (or her) basic source of security in dealing with the world but because it requires less effort to follow established patterns than it does to modify them or adopt new ones. This tendence to resist change in established ways of perceiving and acting has been referred to as "inertia" on the individual level and as "cultural lag" on the social level.[3]

My reasons for not being too hopeful about leadership from Washington derives from the fact that I have resided in that city since 1951, and have observed the patterns of behavior of its leaders, both Democrat and Republican. My position is further supported by the recent behavior of professional economists in government and public offices. On July 13, 1980, *The New York Times* "Week in Review" section featured, on page E3, a fascinating interview with the liberal academic economist Robert Lekachman, former U.S. Secretary of Labor Ray Marshall, and Professor Herbert Stein, formerly chairman of the President's Council of Economic Advisers during the Nixon and Ford administrations. The entire interview dealt with our troubled economy. To get some sense of how we got to where we are, and why we may not get to a "promised land" soon, permit me to cite a few quotations from the people who lead or have led us in designing our economic policies. Let's start with Mr. Stein.

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[3] James C. Coleman, *Abnormal Psychology & Modern Life* (Chicago: Scott, Foresman & Co., 1956), p. 83.

> Since I entered this field in the thirties, I'm rather reluctant to recognize the existence of profound changes. We are suffering from a number of problems, which have to be kept basically separate and are mainly the consequence of errors of public policy over the past twenty years.
>
> We are most obviously suffering from a recession. But the American economy has gone through lots of recessions. By and large, they're not traumatic experiences for the country as a whole; I don't expect this one will be. This recession may be more severe than most; that will really be a consequence of a failure to take inflation seriously.
>
> The basic but really more difficult problem is the slowdown in the growth of productivity. I keep insisting we do not know the causes. Many people say we do; I think we do not really know quantitatively. I would [add] one problem that is going to be dominant in the next five or ten years—the need for a substantial increase in our expenditures for defense. We are not yet facing up to the implications.
>
> But all in all, this is a tremendously productive economy. I'm not particularly concerned that the Japanese or Germans are rising in productivity more rapidly than we are. With some changes in emphasis, we can get through a period—which may be a grim period—of some five years or so, and come out to a much more satisfactory condition.

When Secretary Marshall was asked, "You don't think you underestimated the strength of the economy in 1977-78 and stimulated it too much?", his answer was fascinating. He said, "I certainly do not. We got unemployment down to 5.9 percent before the next shock started." It almost makes one feel that an unemployment level of 5.9 percent is a "norm," doesn't it? It is also interesting to note that since 1971 we have gone below 5 percent only once, and that was 4.9 percent in 1973.

One last quote from former Secretary Marshall regarding this same issue is instructive.

> You have to be concerned about both the immediate and the long run. Doing what we have to do to gain control of the energy problem, for example, will have some inflationary effect. But you hope you help solve a basic problem. I think the same thing about unemployment. Take the automobile industry, the main source of the increase in unemployment in the past year. We're doing it in the way I think we ought to do it. We're working with labor and management to help them solve their problem.

While it is true that United States loans have kept the Chrysler Corporation from going out of existence, recent news about our government, the auto firms, and the United Auto Workers union has not been too cheering. Continuing efforts to impose import quotas on foreign cars or of forcing some of them to produce a limited output in the United States avoids a central fact of life. In Japan a car is typically assembled with a hundred fewer hours of human labor than in the United States. This translates into about $600 per car in manufacturing costs. And this gap has been widening by about 4 percent per year.

A good part of this is accounted for by the superior use of robot machine tools. In addition, both the United States and foreign car dealers I have spoken to are impressed with the industrial design features of the Japanese cars, many of which result in lower maintenance costs for the consumer. Herb Stein and Ray Marshall may not be too worried about these matters, but of course they are not making cars or producing television sets.

Since Herb Stein is a noted proponent of the classical market system, as he firmly supports the punishment of going out of business when management makes the wrong decision, I must admit to wishing that there were some way to apply this system of rewards and punishments to politicians and members of the President's Council of Economic Advisers. Instead, of course, the usual rewards —tenured positions on faculties or senior positions with banks—are still the rule.

I might add, to provide some balance in my reactions to Professor Stein and ex-Secretary Marshall, that Marshall's reference to energy and inflation also reflects what is perhaps the most popular myth about inflation: that energy is the chief villain regarding the problem of inflation. It is instructive to note that between 1975-1980 the rate of inflation in Japan averaged around 4 percent, while in the United States it averaged around 9 percent. Japan gets *all* of its oil from abroad, while the United States still relies on imported oil for less than half of our oil consumption.

It is amazing how often people have to be reminded that the Japanese, Germans, and United States—like all other major industrial consumer nations—pay the same price, essentially, for oil. If anything, because of our past domestic "old oil" versus "new oil" regulations, the United States has paid a bit less for its oil than Japan or Germany. Both countries have lower rates of inflation and unemployment, and higher productivity rates.

Now what can be done about this mess? That is, what can we do about it before we get to the point of a "norm" of 8 percent unemployment, a "norm" of an 18 or 19 percent prime rate of lending, and a "norm" of a zero percent rate of productivity increase, all of which should begin to produce a major stress throughout the nation?

I think the leadership will have to come from some new sources, among which will have to be some new alliances. The lead in West Germany in 1963 for an investment policy *in people*—in order to produce a labor force that was constantly being retrained and upgraded—came from industry. The major industrial firms there had gone through post-World War II problems of unemployment, inflation, and production. They realized that in addition to fiscal and monetary policies that had to be sound, there had to be an effective way to guarantee a skilled labor force that could meet industry's needs for up-to-date labor. Industry led the way, with help from the trade unions, to the continuing education program I mentioned earlier.

I think vocational education researchers should begin to evaluate the human resources-capital investment programs in countries such as Japan and West Germany. Remarkably little has come from our vocational education establishment about what has worked well in other countries and how we can adopt such approaches in United States industry.

I believe that teams of industry people and vocational educators should go to industrial firms and relevant government agencies in these countries focusing on such questions as the following:

1. How often and in what ways are adults trained and retrained?
2. What are the most effective ways to train people? Through what organizations?
3. How do they forecast skill needs? How accurate are the forecasts?
4. What funding techniques are used to support training programs?
5. What role does counseling play?
6. How does one deal with disadvantaged groups, e.g., the Turkish "guest workers" in Germany?
7. Have there been any cost-benefit studies?

8. Which industries have benefited most?
9. What have we learned of use to the United States?

The research needs are ample and represent, I believe, a much-needed change of direction for vocational education researchers. The results will find a ready market, I am afraid, as our industries continue to find skilled workers in short supply, and as unemployable, unskilled workers grow in number in the lines outside unemployment and welfare offices. Thus far, the new administration in Washington has paid scant heed to this ticking time bomb—but the hot summer is approaching.

QUESTIONS AND ANSWERS

Question: You have expressed a refreshing and stimulating approach to human resource policy. I am just wondering, as you have indicated a couple of times in your comments, if the new administration is actually overlooking such an approach. Is there any indication anywhere that the new administration is giving some serious thought to this approach to human resource policy?

Dr. Striner:

The question is whether or not the new administration is giving any serious thought to the sorts of suggestions concerning human resource policy that I have just made. I can discover no indication of interest. I have looked under every convenient rug, around every nearby corner, and I have found none. I will say that I have good reasons for believing that there is none, because in February I wrote an article that was published on the opinion/editorial page of the *Washington Star* about this approach. As a result of that article I did receive some inquiries from several Democratic congressmen, but none from any Republican congressmen. I wrote to two friends of mine about this idea, both of whom are highly placed officials in the Reagan administration. I have not yet heard from one; I did get a very polite response, expressing mild interest, from the other one. There was no interest that I could discern from anyone in the U.S. Department of Labor.

Question: I would like to hitchhike on the previous question, and perhaps take you out of the realm of what you know, to what you speculate might happen. It seems to me that many of the things being discussed concerning economic policy may call for new types of relationships for government—such as a more harmonious relationship between government and business, and a new industrial policy in terms of investments in R&D, regulations, and savings policies. What is the likelihood that these kinds of initiations on the part of government will be forthcoming in the current administration, or are we just going to have laissez-faire and an attitude of "if the government would just back away, somehow these things will happen without it"?

Dr. Striner:

I am rather pessimistic with regard to the short run, because I think that we are caught up, right now, in an interesting combination of economics and mystical revelation; sort of a religious experience, which is interesting to watch. Since many of us have secure jobs, I suppose economics is becoming a sort of spectator sport in one sense. Yet the fact that many people are unemployed is a serious business. Also, most of us who are employed are being affected because of a serious inflationary problem. Right now I do not see anything turning around to change this. For example, moving away from the job skills area, let us examine something as basic as research and development and how it relates to productivity.

Although productivity is based on many factors, one of these factors is an adequate supply of trained, educated people. It is based on a set of relationships that promote constructive output and harmonious relationships rather than completely adversarial ones. An important and significant part of productivity relates to research and development. Now, the present proposed budget is going to cut research and development supported by the government further. This is serious for a couple of reasons. The first reason is because, traditionally, close to 65 percent of all of the basic research done in the United States has been through the support of government funds. This is understandable because basic research has no specific product in mind. It is concerned with fundamental inputs, fundamental information; it is risky; and government tends to be the one that will support this type of research. However, since 1965, basic research as a percentage of the total R&D has dropped from 8 percent to 4 percent. It will drop even further this year.

My next point is that while government can choose to reverse the amount spent on research and development just by increasing or decreasing the budget, government cannot choose to increase the existing number of R&D scientists overnight. Let me give you a few fascinating figures. Examine the number of R&D scientists per 10,000 in the labor force. In 1965, Japan had twenty-five; they now have fifty. West Germany had twenty-three; they now have around forty. The United States had sixty-four; we are now down to fifty-seven. Out of that fifty-seven, about 30 to 40 percent are in the military area; while in the case of Japan, less than 1 percent of their fifty are in the military. Therefore, with regard to the ultimate resource in R&D—the individual, the scientist, the engineer—there is a pipeline problem. It takes approximately four to six years to have an input in terms of increasing the number of scientists and engineers in R&D. If we made up our minds to change the situation today, it would take four to six years to see any progress in that direction.

What I see is not only a lack of interest in moving in the right direction, but also this fascinating mixture of revelation, religious experience, and the acceptance of, for example, the Laffer curve. Are you all familiar with the Laffer curve? (See figure 1.) One of the favorites of the new administration is an economist by the name of Arthur B. Laffer. Professor Laffer came up with this curve relating government revenue to the tax rate. The point is made that, obviously, when the tax rate is zero, government revenues are zero. On the other hand, when the tax rate is 100 percent, government revenue is zero. This is not a very complicated relationship. Although Laffer is given credit for this major insight, actually the relationship was first established by Adam Smith. Also, in 1844, a French economist by the name of Jules Dupuit made some interesting observations on this same matter. He attempted to get data but could not, because as you can imagine, this is a complicated sort of analysis when you start moving from the conceptual framework to establishing the actual quantitative relationship. Based on this unsupported insight, the administration accepted as its basic philosophy that we are at the point where the tax rate is so high, industry and people are being discouraged from working and producing. Their motivation is disappearing. This belief is at the heart of the approach we now have for cutting back taxes. I am not saying that the tax rate may not be too high with regard to specific items such as stimulating replacement of capital equipment; I, for one, think it is. I think that we really do have to examine our tax policy with regard to depreciation rates, savings, and other areas. But the question raised by Laffer is whether or not the level of the rate of taxation is such that it is turning off the economy. Laffer says yes!

About three months ago in the *Wall Street Journal*, there was an interesting article referring to a study which, as far as I can determine, is the only recent study looking into the quantitative basis for the Laffer curve. It was done, happily, by someone with absolutely impeccable credentials from an impeccable organization; namely, Professor Don Fullerton at the Woodrow Wilson School at Princeton University, for the National Bureau of Economic Research. His study, according to the *Wall Street Journal,* indicated that—given the data which the U.S. Treasury Department provided

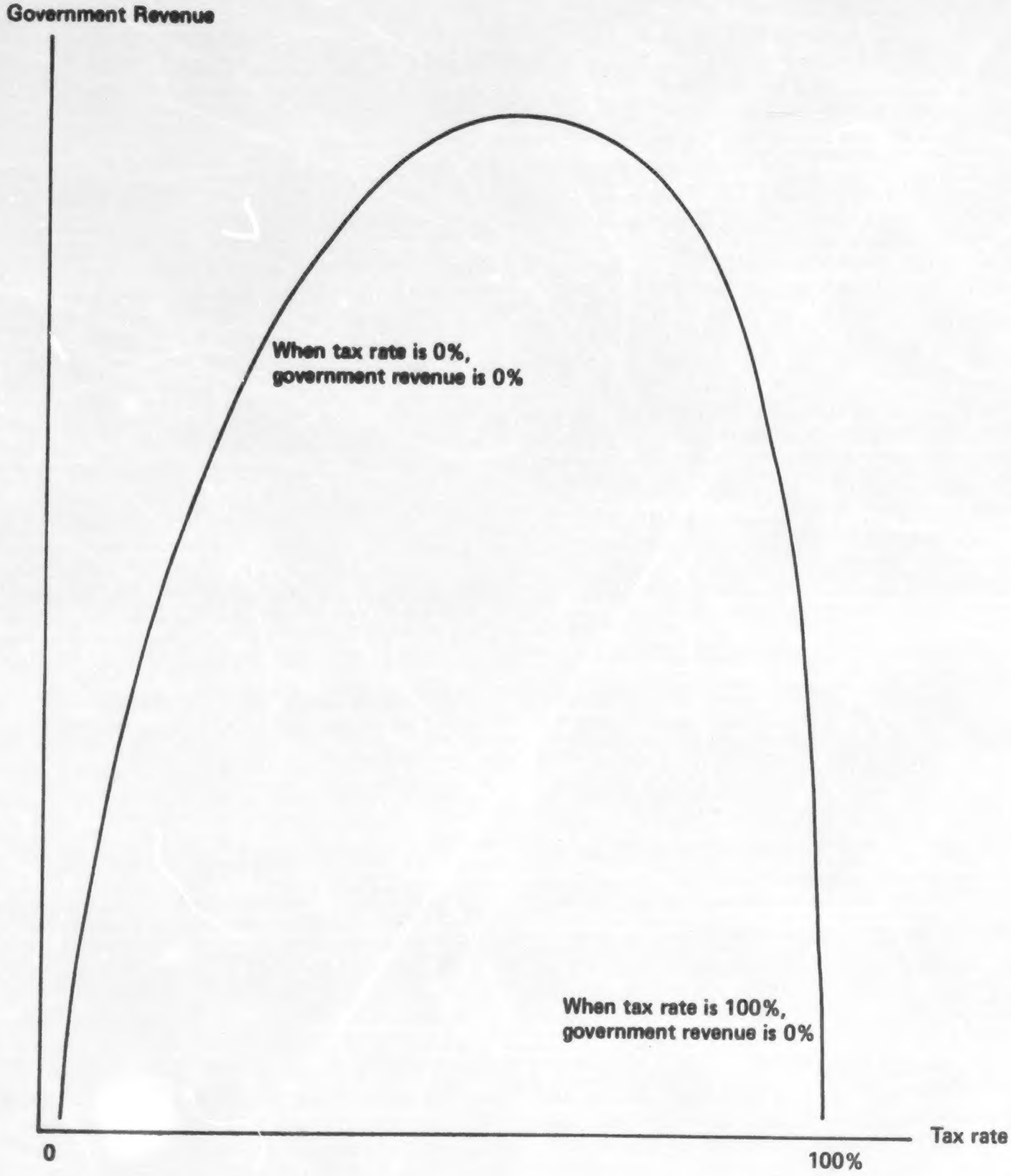

Figure 1
Laffer Curve

(along with financial assistance)—the probable point at which an economic "turn off" could be expected was at the 71 percent of gross income level. Fullerton's study indicates that we are not even close to that figure.

Question: Given the fact that the service industry in our country now makes up a significant part of our employment picture, there has been some criticism that the GNP does not take into consideration the productivity in the services sector. Can you comment on this?

Dr. Striner:

We have productivity data for the services sectors as well as for the manufacturing sectors and agriculture. There is no doubt, though, that it is more difficult to get as much of a sense of significance out of some of the service productivity data than out of the manufacturing, because in the case of producing an automobile, for example, the product is far more observable. You can kick it; you can stumble over it; you can drive it; you can see it. However, if you are talking about services provided by a faculty member, in terms of productivity, it is more difficult to collect data on what was delivered. But for all of the service sectors—trade, wholesale, insurance—we have productivity data. The data in the services sector indicate much lower rates of productivity gain than in the manufacturing sectors, including some negative rates of productivity gain.

Question: It appears to me that as we seek to understand these other industrial models of human resource development, we must be aware that each is based on a kind of paternalism, from industry or from government, that never developed in this country. Put another way, we have nurtured a personal independence that puts much more responsibility on individuals to protect their livelihoods and sustenance. This has contributed greatly to the way our industrial and business system operates with regard to human resources. It may be well and good to ask a lot of questions in Europe and Japan, but what questions do we ask in this country regarding the process by which young people come to employment—and productivity? And of whom do we ask these questions?

Dr. Striner:

Let me put your question into a generic context. The problem is whether the approaches to human resources in other countries are in a cultural context that makes it difficult to translate what they have done in terms of our own culture. I think the term that you used was a "paternalistic mode." Let me answer your question this way. To begin with, let us examine the country with the most radical cultural difference—Japan. The Japanese are quick to give the United States credit for most of the major innovations in their management techniques. As a matter of fact, in Japan, once a year they award the Deming Prize, named after Dr. W. Edwards Deming, an American, who, beginning in the early fifties in Japan, was able to convince Japanese industry and government that they were capable of moving away from the junk they produced prior to World War II to high quality products. The Deming Prize is awarded to the company and individuals who have done the most for productivity and quality control in Japan that year.

The Japanese took much of what they felt to be most significant for productivity, quality, and management techniques from our culture. Now whether or not we can reimport this philosophy was, up until four or five years ago, something that I said could be done. However, the idea was almost immediately rejected by most industry people with whom I talked.

The reaction was that the Japanese worker was very highly motivated, hard working, and identified in a paternalistic sense with the firm, the employer, the family, the entire concept of the extended family. On the other hand, the case of the United States worker was quite different. They were "obviously" not as motivated, and in addition were seen as being lazy and unionized. This nonsense was believed until around 1973. About that time, Japanese industry came to the U.S. Sony set up a television manufacturing plant in San Diego, using those "lazy, unmotivated, slovenly American workers", but with Japanese management techniques, quality control circles, and a whole set of different relationships between management and the employees. They then began to compete with American manufacturers. Within a year, the Sony plant in San Diego had achieved the same record levels for quality and productivity as the Tokyo plant of Sony.

Therefore, to begin with, I would suggest that what the Japanese were able to import from us —the flexibility of mind, the imagination—be used again in our own management techniques. The Japanese looked for what could be used, and they adapted it to their society. We find it difficult to do this for a number of reasons. Most of these reasons are psychological. I would say, as an economist, the real problem of productivity is not an economic problem. It is a behavior modification problem. Economists do not know much about behavior and are unhappy about dealing with it. However, every problem in nature is a multidisciplinary problem. No problem in nature exists as an economic, or sociological, or psychological problem alone. If we are to deal with the problem of productivity, this has to be understood.

Question: With respect to the role of the public sector in training and retraining, you have mentioned a number of models. Do you see the West German approach of an entitlement under law, with a stipend, or do you see the Japanese approach of job security as being viable for this country? I don't think that anyone argues with the need to train. The question is how to do it. What type of model are you suggesting?

Dr. Striner:

Before we arrive at any possibility of an active human resource development policy, we really have to embrace the notion of investment in human resources. That is first. Unless we get that accepted politically, I do not think any model can be devised to deal with the problem of continuous training. Now, let me suggest that we do have the model already. When I received my first Ford Foundation travel grant, and I wrote the book *Continuing Education as a National Capital Investment* back in the late sixties, I went to Germany to do research. While I was in Germany looking at their programs, the Minister of Labor from Southern Bavaria outlined the German approach to me. He explained that everyone was entitled to a certain amount of training, and everyone being trained was entitled to a certain stipend. I said, "That is fantastic. Where did you get this idea from? I have to put this in my paper—this is the key item." He said, "We got this idea from your GI bill." I said, "Of course!"

Then I thought about it. When I got out of the army in 1946, I was told that having been in the armed service for four years, I was entitled to the maximum benefit: up to four years of education with all costs paid. The stipend of a little over $100 a month could provide a lot in 1946. Then, a brand-new, one-bedroom apartment was only $50 a month—and that included utilities. Therefore, that stipend was enough money to pay my rent and to buy most of my food. The entitlement gave me my books. It even went so far as to pay for my doctoral cap and gown—the government bought it for me. The German model, basically, was the GI bill.

In 1946, however, the GI bill was seen as being practical in the United States for two reasons, one which is commonly known, the other which is not commonly known. The first reason, which was probably the less important of the two, was gratitude for the war effort on the part of the average veteran. I will tell you, however, what I think the primary reason was. Beginning in 1944, when it seemed apparent that we were winning the war, Congress became concerned about the Great Depression. Were we going to go back into a depression after the war was over? The government did several things, one of which was to set up the Council of Economic Advisers, and to pass the Employment Act of 1946. But another concern was, as evidenced by the fascinating legislative history of the GI bill, what are we going to do with all these men getting out of the army, the navy, and the air force? They are all going to be without jobs. The answer was to put them in schools. The GIs did not enroll in universities only; the stereotype that they all returned to universities is not at all the case. There was a tremendous resurgence of vocational education and vocational training.

So, I will tell you what I am suggesting as a model. Pass a law that says, basically, whether you are employed or unemployed, if you wish to enroll in a retraining program to upgrade your skills, all you have to do is show up at the employment office to be given a battery of tests to determine what your capabilities are, where your problems are, and whether we can give you some counseling information on the types of job opportunities that exist. Then we would establish the training sites, which could be located in private firms, vocational schools, community colleges, and other training institutions. For example, one of the great, old proprietary training schools was the RCA Institute in New York. It did a superb job of training in electronics. But the law could provide individuals with the option of attending either a vocational institution that is set up on the public or private basis. The law would provide them with this entitlement. All an individual would need to do is show up at the registrar's office, as I did in 1946 at Rutgers.

The point I am making is that there is a training model—both in our history, and in Germany. Germany has an economy very similar to ours in terms of culture, values, and patterns, and the model is working there. It is based on, probably, the set of values that Maslow has suggested. People really are concerned about worth. They are concerned about doing what is necessary to achieve security, with peer recognition going up the scale. By the way, in terms of their security, people are quick to learn if there is a program available that will permit them to achieve what they want to achieve. People do look for information to help themselves, and most act on such information. The GIs did this, as do the German workers.

Question: I am interested in the comparative cost of technical training in America as it relates to Germany and Japan. Secondly, is that training used to deal with social problems as in the United States where we try to solve the problems of the handicapped or the underemployment of women? Also, is there coordination? It is my feeling that in our country there is a lack of coordination. We are forever spending money to train people, but in fields that have no vacancies.

Dr. Striner:

Starting with the question about social problems first, in the case of Japan, you should forget the question of upper-level employment for women; they are a sexist society by our standards. The only time you see a woman in the labor force in Japan, even with a big company, is in a blue-collar-type job or secretarial position that calls for serving tea. You very rarely see women in any managerial positions. Japan is interesting from one point of view, but I do not use them as a model in all things.

My major interest in examining the Japanese model is in their philosophy of continuous investment in the labor force. The Germans, on the other hand, have used their law and their program to deal with the handicapped. They provide special training as well as special tools if the handicapped are involved. In the case of the guest workers, one of the questions that usually comes up is: "Well, don't the Germans use their guest workers, the imported Turks, Greeks, Italians, Spanish, and Portuguese, to fill the low-skilled job slots without training them?" These workers did come to the country with the idea of filling those low-skilled jobs. However, under the German law, all of these workers are entitled to the same type of training as citizens, and many of them take that training. Certainly, the Germans use their legislation as a device for orienting and acculturating guest workers. I do not think it has been too successful, by the way. Everything I have seen leads me to believe that the Turks, Greeks, and the others still stay out of the environment of the larger society.

The Germans have done a number of studies on the cost and benefits of these programs at their Employment Institute at Erlangen, Germany. They show a high benefit-to-cost ratio, extremely high: 3 or 4:1. The Germans literally have pounds of data available that they will send to you on the topic. The only problem is, it is all written in German.

The Germans have found that the average training period is around eight months, although the law allows for up to two years. Therefore, if we assume an eight-month training period, with an approximate eight-month training cost of $1,200 and a stipend for each trainee of $6,000, then we have a total eight-month training cost of $7,200 per trainee. Let us assume a first year or two training enrollment of one million trainees. Then we are talking, probably at the very outset, of $7 billion or $8 billion, and perhaps the second and third year going to $16 billion. CETA has been running at around $12 billion per year.

It is important to remember one of the points the Germans made. When they instituted their program they found that almost *all of the long-term unemployed immediately were cycled into this program.* That is because the long-term unemployed groups were made up of people who really wanted to get into a whole new skill area. *Therefore, unemployment benefits dropped precipitously.* Studies have shown that what is happening in Germany now is that unemployment insurance is almost 100 percent short-term.

Question: You said that in Japan the large companies have lifetime employees whom they continued to train. What do the employees in the small firms do? Is there a national effort to help them?

Dr. Striner:

I had heard for several years that the Japanese government did almost nothing to help these people. Then one day when I was giving a talk, there was a Japanese official in the audience when I said the Japanese were not helping employees in the small firms. He said very politely, "May I send you some material?" I said, "I would be delighted." So he sent me their Labor Law legislation. It turns out that the Japanese government has unemployment insurance. That is the first thing I had been told they did not have. The unemployment insurance runs for about eight months, and it covers between 50 and 65 percent of a worker's last wage. Ours averages out to around 30 to 40 percent. In Japan, it covers all individuals regardless of prior attachment to the labor force. So, there is unemployment insurance in Japan. But, there is very little that the government does in terms of retraining or counseling. In terms of vocational counseling or regular counseling in the school system, they are about fifteen years behind us.

Question: What about preemployment training for work, such as public vocational education? How do we make up for the lacks?

Dr. Striner:

I think there are several lacks. The first lack is that the average educator, through no fault of his or her own, has insufficient information about where the skill needs are. It is difficult to plan the type of skill training that makes sense unless you have some sort of information base from which to work. The United States, as probably most of you know, is the last major industrial country in the world where we have no job vacancy information. The U.S. Employment Services has job order information but not job vacancy information; these two categories do not always overlap. Therefore, to begin with, unlike Germany, France, and most of the Western European countries where it is compulsory to report job vacancies (which allows them to have some sense of where the job needs are and also allows them to plan their vocational skill training programs), we do not have such a compulsory system. The first suggestion that I would like to make is that perhaps educators should exert some pressure on Congress and the U.S. Department of Labor to move in the direction of finding out how many jobs exist and where. Secondly, I think that we undoubtedly have to exert pressure for funding basic reading programs. Especially with the hard-core unemployed, the rate of functional illiteracy in the country is a major obstacle to skill training. We have moved away from the old types of jobs that required only a strong back and a weak mind. There are very few of those jobs around. A worker must have a fairly decent reading level—probably at least at the sixth or seventh grade level for most of the jobs that we think are worthwhile. Therefore, the major source of pressure on the teachers' unions should be the literacy level of the products of our educational institutions. It's a national scandal!

About a year and a half ago, I began griping about the degree to which most of the educators were very relaxed about illiteracy. While talking to one of the senior staff in the American Federation of Teachers, she made this statement, "We do not have a major illiteracy problem, do we?" I said, "We sure do." I was amazed at what she felt was the level of functional illiteracy in our country. She thought it was very low—it is very high.

I think that we have to get back to applying pressure to provide funding for literacy training. We have to exert pressure on Congress and the U.S. Department of Labor to begin to get the sort of data that we need in terms of where the new jobs and skill needs are going to be.

Question: Isn't it unfair to compare our training programs with those of other countries?

Dr. Striner:

In this country, private industry has shifted the cost of training to either the individual or to the public sector, so that we have this enormous vocational education system. We have technical institutes, we have community colleges and junior colleges, and we have this tremendous continuing education program in our country. Therefore, the comparison makes us look a lot worse than we really are because—in our sloppy fashion, in this disorganized system—we have been able to get, for the most part, the kind of workers we need. (I am not talking about the professional workers who take four to six years to get their training.) We have done studies in the U.S. Department of Labor of who the most skilled workers in the United States are. They are tool and die makers. From our most recent study, we determined that average American skilled workers never start training in an apprenticeship program or even in a vocational education school. Instead, they move from employer to employer to improve their skills, and they end up at a certain level. Now, I am not arguing that this is a very efficient way, or that it is the quickest or the most sensible way. I simply point out that this type of training is really more of what we have in this country. I think we have to spell out how some American workers make a career in order to make a decent comparison.

Question: To add to the last question, to what degree are we willing to pay some economic costs to preserve individual options and freedoms, individual rights to make a choice, to recycle a career?

Dr. Striner:

I think that the whole question is becoming one of how much more of an economic crisis with regard to low productivity, loss of markets, high levels of unemployment, and high levels of unemployability are we willing to accept before we change our methods of dealing with the problem of training? The training program I have suggested poses no threat to individual options, freedom, or rights. To the contrary, it *gives* options and freedom!

Question: Would not most economists agree that the productivity problem is a problem of management rather than the skill of the worker?

Dr. Striner:

No, most economists would not agree. However, *I* would say that 80 to 85 percent of our productivity problem *is* a management problem. In addition to management, however, we have a problem that has to do with our institutional values. It has to do with what we are willing to accept as new ways of dealing with problems. We have something called government. I would call it public management. Government has to begin to understand its role with regard to its decisions that affect resource allocation, productivity, and economic growth. These are also management decisions; *public management.*

Let me further comment about why a massive training program has to be based on a national entitlement effort, rather than on individual firms along doing training. In Germany, where management is closer to our form of management, their approach is, "No, we are not about to do this on our own." While there are a number of American firms that do accept this responsibility, such as IBM or Xerox, not many do. In Germany, there are some who do, but most of the Germans are very much like us and refuse. Let me tell you why.

For example, the Chevrolet dealer in Washington D.C. would hesitate to train a front-end mechanic. The attitude would be that the $500 to train the worker could be in vain if the Ford dealer down the street hires the mechanic away from the Chevrolet dealer upon completion of the training. Far too many employers in the United States would rather not train a worker, allow the worker to be trained elsewhere, and then compete for the worker's services. In Germany most employers are willing to accept a payroll tax of 2 percent to supply funding for individuals who want to get their own training and counseling with some help from the federal labor office.

We have far too many people in our country who have no marketable skills but still want to pursue the great American dream of a job and security. We must make a choice. We must either give them the skills, somehow, develop the mechanisms for them to acquire these skills so they can share this great American dream; or we get the other side of the coin. We get property damage and antisocial action. We do have alternatives to training; jail cells cost $40,000 per cell. How many cells do we want to fill? By the way, we have another option: we can shoot them. I do not think that is desirable or realistic, however. Do you?

Finally we have the possibility of investing in these people, even though not all of them are going to pay off. That is a risk we simply must accept. I do not think the market approach is acceptable if we want to increase productivity, if we want to make most people employable. I do not see this happening by virtue of the present approaches. We have to move in the direction of a major change in our policy. We must begin to think in terms of investment in human capital as a very pragmatic way of upgrading skills, developing a labor force that is available to serve the changing needs of new technology, and finally, increasing tax revenues as people get better-paying jobs.

Question: Earlier, you made the point that we are under-investing in vocational skill training. Assume that we have three broad strategies for federal stimulation in this area: (1) investing in training programs such as vocational education; (2) providing entitlements to individuals; or (3) offering tax incentives and other benefits to the private sector. How would you manipulate these three policy alternatives with respect to present status or changes in the mix? Please be as specific as possible.

Dr. Striner:

For short-term, on-the-job training of up to—let's say—a few days per month, I would permit an appropriate company deduction from a tax liability. Adequate proof of the training need would, of course, be required. For major retraining, however, I would use the entitlement and stipend legislation I discussed. The GI bill of World War II model is the one I prefer, and so do the West Germans. This entitlement would pay for training programs in public or private vocational education, community college, or university. Tax incentives also could be utilized in those cases where a company might send an employee to a training program outside of the firm, but where the company continues to pay the full salary of the employee-trainee. Salary costs could be deducted as a cost of doing business.

Basically, short stints of training by a company would be dealt with by tax policy. Longer training, where an employee seeks to remain with the firm and the firm wants to retain the employee, also would be a tax deduction. But all major retraining and basic education would be seen as an investment by the society, and be a part of the entitlement program.

The reason I insist on having a program based on a law that entitles people, as a right, to training results from my reading of our lack of commitment to human resource programs in our history. We tend to react to crisis when it comes to unemployment and training. Fiscal and budget considerations cause funding of human resources and training programs to go up and down like a yo-yo! We delude the average citizen into believing that our token training efforts are really an all-out effort to equip our labor force with skills for jobs. Our highly touted Manpower and Development Training Program of the sixties and the training titles of the Comprehensive Employment and Training Program never accounted for more than one-tenth to one-half of 1 percent of our labor force. The training programs funded by the West German and French governments account for about 2 percent of their labor forces. They do it by having an entitlement program, and that is how we are going to have to do it too—if we are serious, that is.

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IMPROVING PRODUCTIVITY IN THE WORK FORCE: IMPLICATIONS FOR RESEARCH AND DEVELOPMENT IN VOCATIONAL EDUCATION

Introduction

I would like to take a couple of moments to talk about the American Productivity Center and why this organization with which I am affiliated was created, as this relates directly to my presentation. Our Center is a privately funded, nonprofit organization that was created because there was a concern, on the part of our founder, Dr. Grayson, and on the part of the American business community, that productivity in the United States was in trouble. It was believed that if we could improve productivity, we could have an impact on some of the major economic problems we face as a nation and as individuals. The private business community in the United States felt strongly enough about these issues that one hundred organizations put up the money to establish the Center. Since that time our developmental efforts have resulted in the addition of another 120 organizations and foundations to our founder and sponsor base. These organizations contribute to and support the Center because they believe in the objectives around which we are established. These objectives are (1) there needs to be stronger awareness of the importance of productivity and its role in the American economy; and (2) there is a productivity problem in this country, and there are solutions to that problem. Somehow this message needs to be brought out, discussed, and clarified. There is a tremendous need to understand clearly the particular ramifications that productivity holds for specific segments of the economy.

There is a third objective of my organization. It relates to productivity, productivity measurement, and productivity improvement, about which we do not have sufficient information, and to which we must address ourselves in a research and development model. Research and development in these areas would allow us to identify the improvements in productivity that are necessary and the techniques appropriate for causing those improvements. So, as an organization, we have a research responsibility. We are extremely concerned that our research and awareness efforts be translated into action. Another concern is that individual organizations take the initiative in addressing themselves to improving productivity internally. Productivity cannot be mandated from the White House; it cannot be mandated by Congress. The improvements in productivity that are necessary for the economic well-being of this country must come from individual organizations in both the private and public sectors. So the third objective of the American Productivity Center is a commitment to work with individual organizations, addressing the peculiar problems they have with their productivity, and encouraging and assisting them in taking steps to improve it.

The Productivity Problem

At the present time in the United States, we have a rate of inflation that is running in excess of 15 percent for this year, and if nothing is done, it will probably go higher. We are either in the midst of a long predicted recession, or it is going to arrive next week, depending on which newspaper column you read. I think it is here! I think it is real! I think it is beginning to hurt! Unemployment is up to the highest level it has been in fifteen years. That is having an impact on the people we would least like to have unemployed in terms of our social goals as a nation. Because of the combination of unemployment and inflation, we are all feeling the effects of lower real income. Social tensions are increasing and will continue to increase as the economic pie available in this country shrinks and special interest groups continue to demand their "fair share"—however they choose to define it. We see a disturbing trend in the drift away from the private enterprise system in this country.

Productivity can be defined in a variety of ways, and it has a variety of components. I am not going to try to start my presentation with a precise definition of productivity. I would rather let that evolve as I go along. Productivity, at this point in time, is a problem. It is a problem for the nation; it is a problem for people who are involved in vocational education. Productivity poses a challenge to this nation. It poses a challenge to you, as specialists, in a particularly important area. Finally, productivity represents an opportunity. I would like to talk about those three points today.

The reason we have a problem is that the productivity growth rate in the United States is slowing down. This is not just a natural low point in the economic cycle; it is a worldwide phenomenon. Productivity growth is slowing down in every country in the world. Unfortunately, in our country it happens to be slowing down faster than in the rest of the world. This decline in productivity growth has put the United States in a very uncompetitive position in particular industries. As we continue to become less productive, to underdevelop as a nation, competition from abroad is going to increase. The cost of doing business and the cost of maintaining a work force is increasing every year.

Unfortunately, output is declining at the same time, which fosters that noncompetitive situation. We see some real problems in the proliferation of the government regulations that deal with the operation of businesses and the operation of public sector operations and functions. Generally speaking, government entities are more drastically affected by the proliferation of government regulations in the areas of environmental protection, health, and safety than are private sector organizations. Therefore, productivity in public sector organizations suffers even more. The general lack of productivity awareness, in part, contributes to this as well. The combination of all of these factors, feeding upon one another, has led to the continued decline in our nation's productivity rate.

There are several viewpoints on productivity and the productivity problem that are in contention at this time in this country. One is that there is a measurement problem: "We don't have a productivity problem; what we have is a measurement system that cannot accurately assess the economic health of the United States." Unfortunately, the good, bad, or indifferent measurement system that we have is the same one used by other developed nations in the world. This measurement system indicates we have a serious problem because the productivity in these other nations is growing, and ours is not. So it seems somewhat erroneous to focus on the measurement contention as the sole reason for our productivity problem.

A second point of view is that productivity is not a root cause of our economic problems. It is an artifact of those problems. Many people believe that if we can resolve problems such as inflation, if we can resolve problems such as the balance of payments, productivity will take care of itself. In my Center's view, that is putting the cart before the horse.

The third point of view is that there are real productivity problems that exist in this country and that they can and should be addressed. That is, in fact, why the Center was created.

The last viewpoint is the one to which my organization subscribes; it is that we have all three of those problems. We have economic problems that we have to resolve; productivity is one of the keys to resolving inflation, as well as being one of the keys to addressing our balance of payments problems. We do have measurement problems, and we do need to develop tools that allow us to more accurately measure the productivity of service sector operations such as research; but our perspective is that the way to do these things is to address the productivity problem as a whole and then treat the other variables as subsets of it rather than excuses for it.

From the end of World War II in 1945-46, up until 1967, productivity in the United States grew at a rate of 3.3 percent a year, every year. It was a constant; we could count on it; it was a fairly reasonable growth rate for the United States. It led to some substantial and positive changes in our economy. Then something happened to the economy in the United States in 1967 or 1968. The productivity growth rate in this country from 1967 to 1978 averaged about 2.2 percent a year. It dropped substantially below that level during the recession in 1974-75, but it averaged 2.2 percent a year. In 1978 it declined to 1.8 percent and in 1979 it went to a negative 1.9 percent (see figure 1). This was the first time productivity growth in the United States had been negative since the Great Depression in the 1930s. As I indicated earlier, we are not alone in having a productivity growth rate decline. This has been a worldwide phenomenon. Every developed nation in the world has experienced a decline in the rate of productivity growth. Unfortunately, ours has been much more severe than that of any other developed country. When I make this statement, I am speaking in terms of the specific industries in the United States. That is the measure of the Gross National Product over the input of person-hours of labor in a particular time period. It is not as accurate a measure as we would like to have, nor is it precise enough for the kinds of management decisions that are necessary for this nation, for an industry, or for an individual organization; but it is the method of measurement that is presently used for a variety of historic reasons. So, keep in mind that I am talking about that particular measure when I discuss productivity and productivity growth.

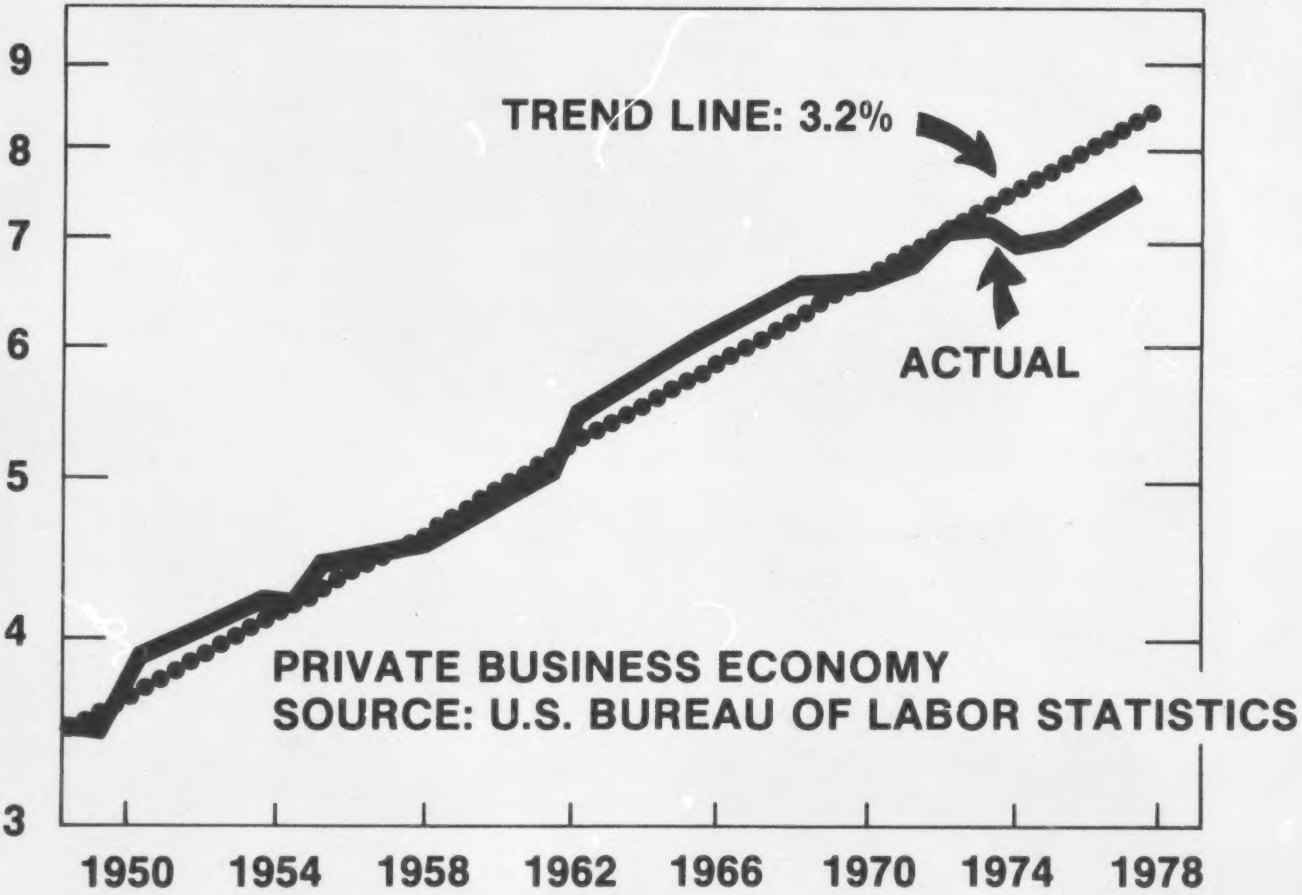
I indicated that productivity has declined in the United States. That decline is not universal. We have segments of the economy that are extremely healthy, that experience a positive 6 percent growth rate; some experience a 7 percent growth rate each and every year (see figure 2). These segments tend to be in areas that are capital intensive or highly technological in orientation. The telecommunications industry, the synthetic fiber industry, and air transportation are examples. The segments that experience a lack of growth are labor intensive types of operations. Coal mining happens to be among the worst in this category, followed very closely by construction, followed by retail trade.

However, if you synthesize all of the sectors of the economy that we measure at the present time, the average productivity growth rate last year was negative. These same segments of the economy are measured in other countries, and compared to the developed nations of the world, the productivity growth rate in the United States is dead last! The rate of productivity growth among the developed nations of the world surpasses us in ten countries out of the top eleven. We rank eleventh at the present time. The countries that surpass us include France and Italy, as well as the known and acknowledged leaders—Japan and West Germany.

In terms of absolute productivity, the United States is still the most productive nation in the world. Unfortunately, at the rate of productivity growth that is being experienced in this country, and in light of what is predicted for this country for the next ten years, we will soon lost first place among developed nations in absolute productivity. If the other developed nations of the world continue to grow at the rate we have predicted for them, a rate that they have exceeded for the last two years, we may become the fifth most productive country, if not the sixth, within this decade.

In economic terms, we are going to become a fourth or fifth ranking world power within this decade unless something positive is done to change that situation. The impact of the decline in productivity growth is significant and direct. If productivity had continued to grow at the rate it grew prior to 1967, your family income would have been $3,700 higher in 1978 (see figure 3); it would

U.S. PRODUCTIVITY



PRIVATE BUSINESS ECONOMY
SOURCE: U.S. BUREAU OF LABOR STATISTICS

FIGURE 1

OUTPUT PER MAN-HOUR—MFG.
1967-77

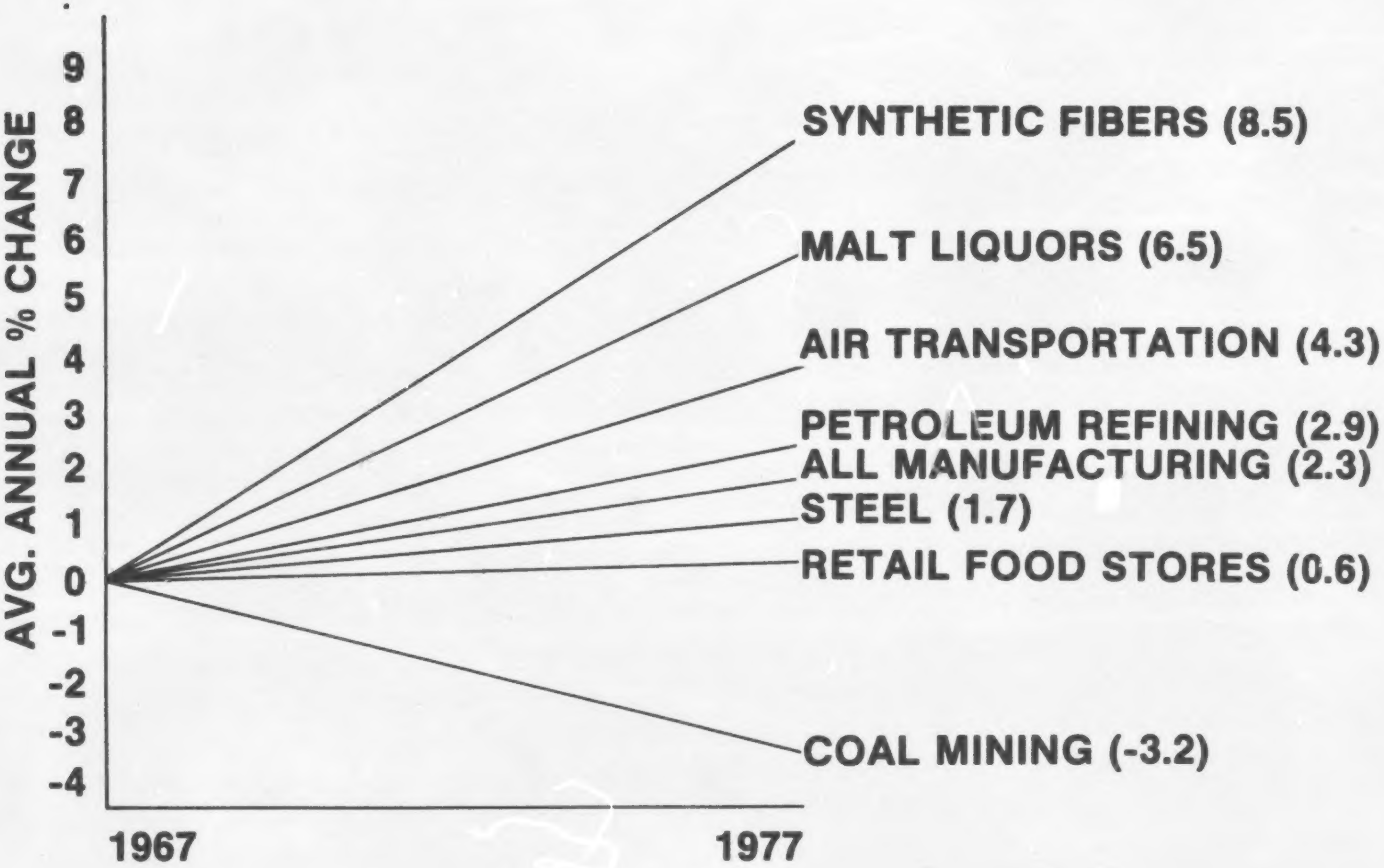


FIGURE 2

FIGURE 3

LOSS OF HOUSEHOLD INCOME FROM SLOWER GROWTH

Productivity 1948-68	3.3%
Productivity 1968-78	1.5%
Loss	1.8%
Loss Household Income: 1978	$3,700

Source: New York Stock Exchange

have been $4,200 higher in 1979. We would have had an increase in income of 20 percent or more, and we would have had a Gross National Product of almost $300 billion more than we did.

Unfortunately, we did not have that growth rate, so all of these figures show up as negatives in that time frame. In very specific terms, if we look at the rate of productivity growth from 1948 to 1968, it was 3.3 percent. Subtract the 1.5 percent we grew between 1968 and 1978 from that 3.3, and that leaves us with a residual of 1.8 percent. That translates into $3,700 of lost income to the average family in 1978. In terms of the impact on individual businesses, take a look at the growth in compensation (see figure 4). It has grown. Look at the rate of output—it has declined. That is where the problem lies. We are paying more and getting less. In terms of its impact on individuals, if you will look at real hourly compensation that is adjusted for the effects of inflation, people are no better off as a result. I think some figures I saw last week indicated that as a result of inflation, the average compensation in this country is now basically at the same level as it was in the second quarter of 1972. There has been no real progress in terms of compensation in this country.

Specific problems arising as a result of this decline in productivity are the inflationary pressures that we face as a nation, the increased regulatory environment under which we must live, and the growth in the size of the public sector that has been associated with the growth in regulatory activity. The interesting thing to look at in this respect is that the data indicate the correlation between the size of the public sector and the decline in productivity is a negative .9 (see figure 5). The larger the public sector grows, the slower productivity grows in our nation. The private sector threat that I mentioned, the social demands of which I have already spoken, and the continued slowdown are all part of a spiral that we have gotten ourselves locked in to, and we need to get out. Management within individual organizations is faced with some direct, tangible problems that are attributable to the decline in productivity. The rising, indirect costs of doing business, as well as those associated with direct hourly compensation, continue to grow at a fantastic rate. We have a lack of adequate productivity measurement systems in most organizations; and when they exist, they rarely address themselves to management. They are focused on the work force, and they deal with the units of output per hour, per worker for the hourly work force. We fail to examine the productivity of those people who constitute the driving force in an organization, and who also cost the most. That is something that needs to be addressed.

There is a reduced rate of capital formation in this country. There are incentives to not save, and the correlation between productivity and capital formation is .9 (see figure 6). The rate of capital formation in Japan is four times what it is in the United States. It is 3.5 times higher in Germany than it is in the United States. These two countries' productivity growth exceeds ours by almost the same amount.

We have a tradition in this country of nonproductive labor/management relations. We operate on an adversarial model in our labor relations, and that is nonproductive behavior. We need to change that!

The question has been addressed to me several times this morning as I have visited with members of the staff is: "What is the attitude of labor, organized labor, to productivity? Don't they say that it is a bad thing because it means speed up, it means work harder, it means work longer hours?" My answer to that has to be, "No, that is not true." Organized labor has come to realize, at least some segments of that group have come to realize, that improved productivity in the United States is mandatory for their continued existence.

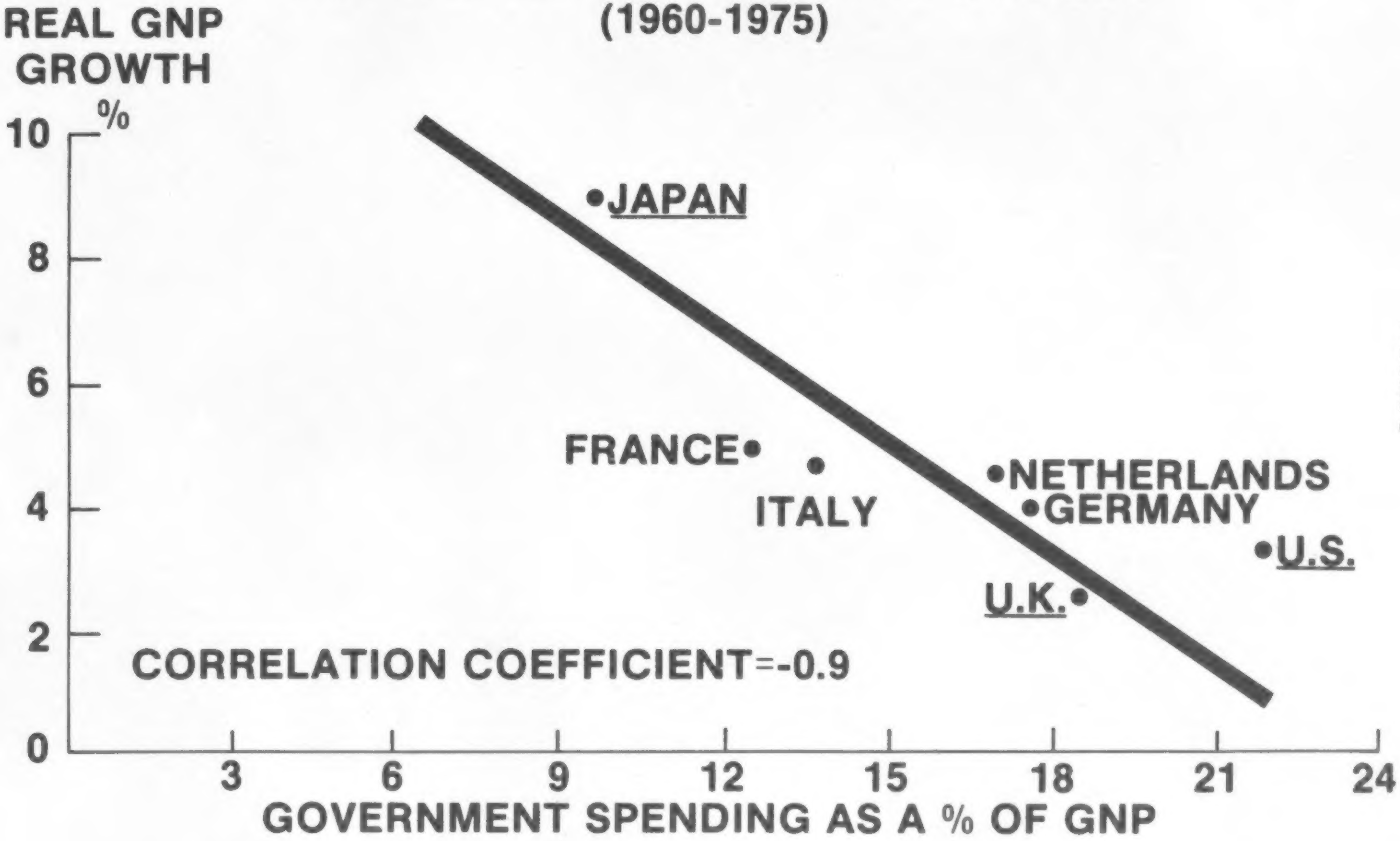
FIGURE 4

PRIVATE BUSINESS SECTOR

	1960-67	1967-77
Compensation Per Hour	4.9%	7.8%
Output Per Hour	3.7	1.6
Unit Labor Cost	1.1	6.1
Consumer Price Index	1.7	6.3
Real Hourly Compensation	3.2	1.5

Source: U.S. Bureau of Labor Statistics

THE LARGER THE PUBLIC SECTOR, THE SLOWER THE ECONOMIC GROWTH (1960-1975)



Federal, state, and local government expenditures for goods and services. Excludes transfer payments.

FIGURE 5

Investment Improves Productivity

1960-1977

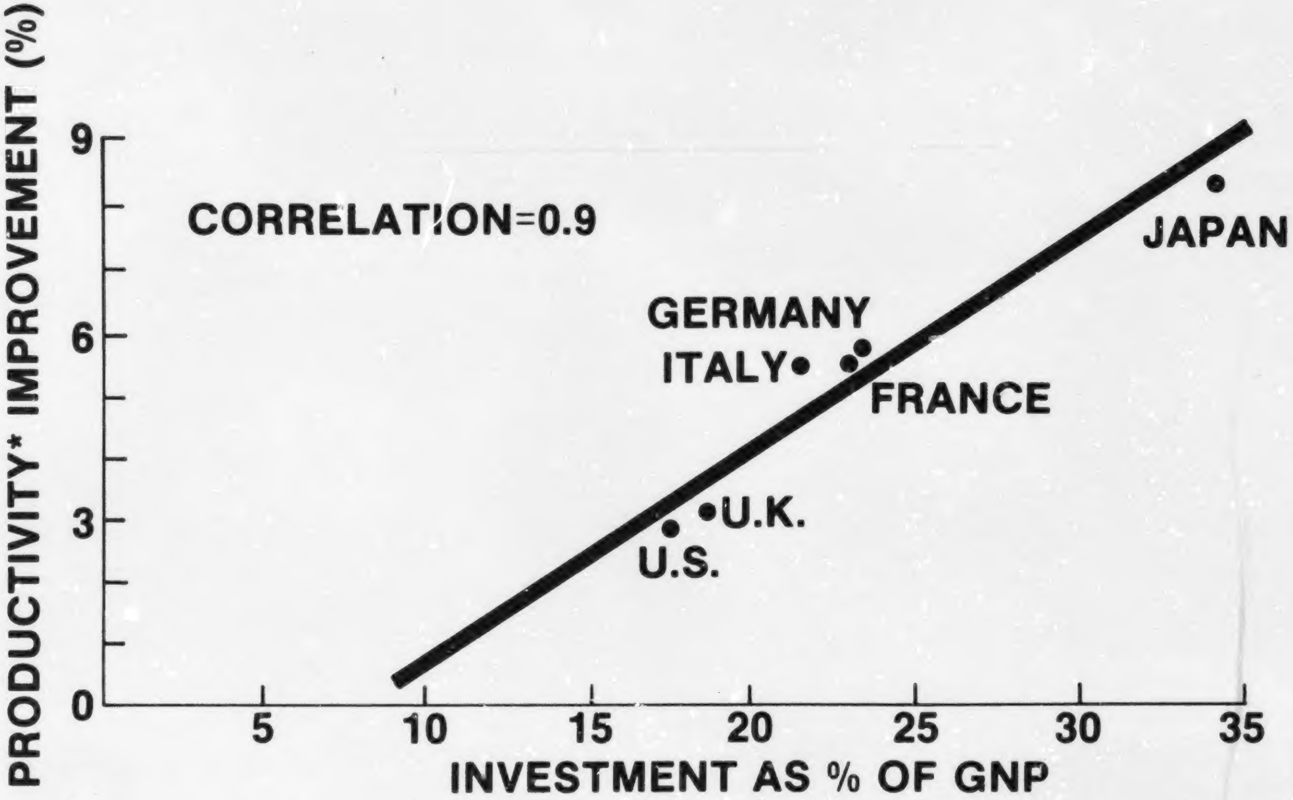


FIGURE 6

*Output per Man-hour in Manufacturing

When you talk to members of the steelworkers' union about productivity, their attitude now is much different from the way it was five years ago, but that has to do with the fact that we have lost 25 percent of our internal market in the steel industry to foreign competition. They have finally recognized that in order to survive as a union, they must become concerned about and participate cooperatively with steel industry management in productivity improvement efforts. The same is true in the mine workers' union. The same is true in the communication workers' union. The latter group of workers, in December of last year, convened a conference for members only in which the primary theme was that of productivity improvement. Although productivity growth in the telecommunications industry is among the greatest of all sectors in the economy, it needs to continue to improve if people in that industry are going to stay employed; and if they are going to stay employed, they are going to have to change. They are going to have to change their education; they are going to have to have different skills three years from now than they have today, or they will not have a job. The union called that meeting to say, "You've got to become more productive, or you're not going to have jobs. We, as the union, are not going to lie down in the road and block changes that are necessary in this industry. We are going to work with the organizations with which we are affiliated to help you make those transitions, but if you can't make those transitions, get out. It has to change, and you must be ready to go along with it."

When George Meany was still alive and president of the AFL-CIO, his attitude toward productivity could not be expressed in a forum such as this. The present president of the AFL-CIO, Mr. Lane Kirkland, has a much more positive attitude. He recognizes that productivity improvement is necessary, and, in fact, that labor should take the lead in productivity improvement. We are beginning to see some positive indications of that change in leadership attitude taking shape. I do not mean that if you were to walk into a local in a particular union and began to talk about productivity, the union members would not throw you out the door; but there are some positive changes beginning to occur at the top levels in various organizations. An example I might relate to you is that in a recent negotiation, the steelworkers included a clause in their contract that said, "We will establish a joint labor-management organization to address ourselves specifically to the improvement of productivity and quality of work life during the duration of this contract." This statement reflects a substantial change from their position of as little as a year ago. The reason for this change is rooted in those economic factors of which organized labor is painfully aware. Workers are getting less money now than they got several years ago in terms of real dollars. Unemployment is rising, and it is beginning to cut into membership, which is the lifeblood of the union. There is a reduction in the quality of work life in a number of sectors of the economy. This does not mean we are reverting to sweatshops by any stretch of the imagination. What it means is the employees perceive their organization as not as nice, not as good, not as pleasant a place to work as they would like it to be. Now whether that is real or imagined is unimportant; the fact remains that people perceive the quality of work life as having declined. It is a situation that must be addressed by any organization.

What is the reason for the decline in productivity in the United States? There are as many lists, such as the one that I will review with you in a moment, as there are people in the economic and business community. Most people have their pet sets of ideas, and with very little reading you will see that there is a tremendous amount of variation in the reasons given for the productivity decline. We do know some of the factors that have contributed to that decline. Here is a sample list.

Reduced Investment
Larger Service Sector
Government Regulations
Environmental Expenditures
Labor Restrictions
Work Disincentives

What we do not know is the percentage that each factor has contributed. If we cured the problem of the present labor force mix, what would happen to productivity? Would it go up? Would it go down? Would it go up one point, two? We do not know the percentage of contribution. There is some speculation. We have some historical numbers, but we do not have a firm grasp on the impact of these factors on productivity or productivity growth.

Let us review the list of reasons given for the decline in productivity. The composition of the work force, which is something that you need be very concerned with in your particular areas of endeavor, has changed since the end of World War II. About the time when productivity began to decline in the United States, we saw a tremendous influx of relatively inexperienced people into the work force. The "baby boom" began to hit the market, and we began to see more young workers entering the work force. We saw a return to the work force by women who had not worked before. We saw a greater influx of minorities. All of these groups came to the work force with little or no work experience. This had a negative impact on productivity. I am happy to say that recent studies indicate that among the members of these groups, learning has taken place. The inexperience factor is beginning to cancel itself out as people participate in the work environment over a period of time.

We ended the shift from agriculture to manufacturing in about 1967. We began a major shift from a manufacturing economy, beginning at the end of World War II and accelerating in the late sixties, to one that is service based. At the present time, the American industry mix is about 70/30; 70 percent service industry focused, and 30 percent manufacturing industry focused. The projection is that by 1985, we will be 90 percent service industry oriented. One of the problems associated with this shift is that we do not measure service industry productivity particularly well; therefore, productivity in the United States is probably better than the figures show. Another problem is that productivity in the service industries can never really reach the levels of manufacturing productivity or the levels of the manufacturing efficiency. I think that service industry productivity is a matter of management technique, of management talent. And that is a problem which can be addressed.

We have seen a reduction in investment. As I indicated, our current level of investment in this country, in capital equipment and facilities, is four times lower than it is in Japan, and 3.5 times lower than it is in Germany. Part of the reason for this low level is that there are no incentives for individual Americans to make the kinds of savings investments that are necessary for the capital stock of this country to expand. There is no incentive right now, or less incentive than there should be, for business to take that capital and expand it with new plants and equipment. There is an uncertainty associated with the economic behavior of the United States government that leads a business person to say, "Rather than commit to building a plant that will be ready three years from now, since I do not know what the economy is going to do, I am going to put those funds into some short-term investments rather than into new equipment." As a result, in the steel industry for example, there are twenty-two blast furnace establishments of "modern technology" that exist in the world, and only two of them are in the United States; fourteen of them are in Japan. Is it any wonder that the largest segment of the steel industry's lost market share has gone to the Japanese industries? No, not at all. This hesitancy on the part of the business community, and on the part of the investment community, is something that can be changed only by substantive changes at the national level. Change is necessary to create more stable economic policies than we have, and unfortunately, the problem is not being addressed as rapidly as it needs to be.

We have had a tremendous upsurge in what I will call "protective R&D" in various industries to comply with environmental and other regulations that we have imposed upon ourselves. I am not saying that those expenditures are not necessary for previous excesses to be redressed. I am in favor of clean water and clean air. However, I think in some cases we have exceeded what is necessary because of the way in which those regulations have been structured and enforced. We have diverted attention from product development, from R&D on new processes and products, to R&D that is associated with how to comply with regulations. If we look at the national productivity equation, or even at that of individual organizations, this R&D shows up in the input side and not on the output side of the equation. As a result, our measured productivity has declined in this country. That relates to another measurement issue, "How do you measure quality?", and that is something I will come back to later.

There has been a growth of disincentives to work in this country. Some of these are legal, in part the results of bargaining agreements imposed by unions, but the most difficult to change are those that have grown up out of habit. The idea of going home thirty minutes early to beat the rush hour, or coming in fifteen minutes late to avoid the rush hour are examples of such habits. These behavior patterns have appeared in reaction to management efforts to *get more work out.* They have resulted in some substantial cumulative changes in the work force's behavior, which have had a negative impact on the "work ethic." I talked to the general manager of a shipyard on the West Coast who indicated that on payday he had 135 more people in attendance than he did on any other day of the pay period, and that if he could only get those 135 people in there on a regular basis he could service two more ships a year, but he was unable to convince those people to come in on a regular basis on any day other than payday.

Included in figure 7 are causes for the business slowdown, as cited by the U.S. Chamber of Commerce in a survey of business leaders around the country. Some of these reasons are the same as those that have been generated by economists, but it is a much more exhaustive list. The general business community sees federal regulations as preeminent among reasons for the slowdown, the general business climate, the uncertainty, and *worker attitudes.*

Another recent survey of employees in Texas in which I participated indicated that the second ranking factor among workers' reasons for the decline in productivity in Texas organizations was *management's attitudes.* These opposite survey results reinforce the point I made earlier about our contentious pattern of labor/management behavior. The slowdown in productivity is related to this factor, and I think the pattern of labor/management relations needs to be changed. Other reasons cited in the U.S. Chamber of Commerce survey were welfare and unemployment benefits, state government regulations, the lack of investment, labor union activity, taxes, and inadequate R&D.

Management attitudes appeared at the end of this survey. Workers' skill level was also quite far down on the list, but I think it is also something that needs to be addressed. There is a perception on the part of the management that people entering the work force do not possess the requisite skills to do the job. Rightly or wrongly, that is the attitude of management in most corporations in this country. It does not reflect their attitude toward unskilled labor only. Not too long ago I met with management in the Internal Revenue Service to discuss productivity on the part of the Internal Revenue Service agents and officers responsible for audits and collection. This is not my favorite area for improving government productivity, but I have as my primary work assignment improving productivity in government organizations. One of the points I found interesting was that management in the Internal Revenue Service perceived degreed accountants and economists, who came into their employment after a minimum of four years of college training, as not possessing the basic skills required to audit taxes. In fact, it takes the Internal Revenue Service four months to train college graduates to the point that they will let them look at a tax return. They feel that these entry-level people do not possess the "right attitudes" toward the job, and these are degreed professionals. This example is only one of a number indicating that concern about workers' attitudes extends from lower skill levels of the work force to fairly high up.

CAUSES FOR SLOWDOWN

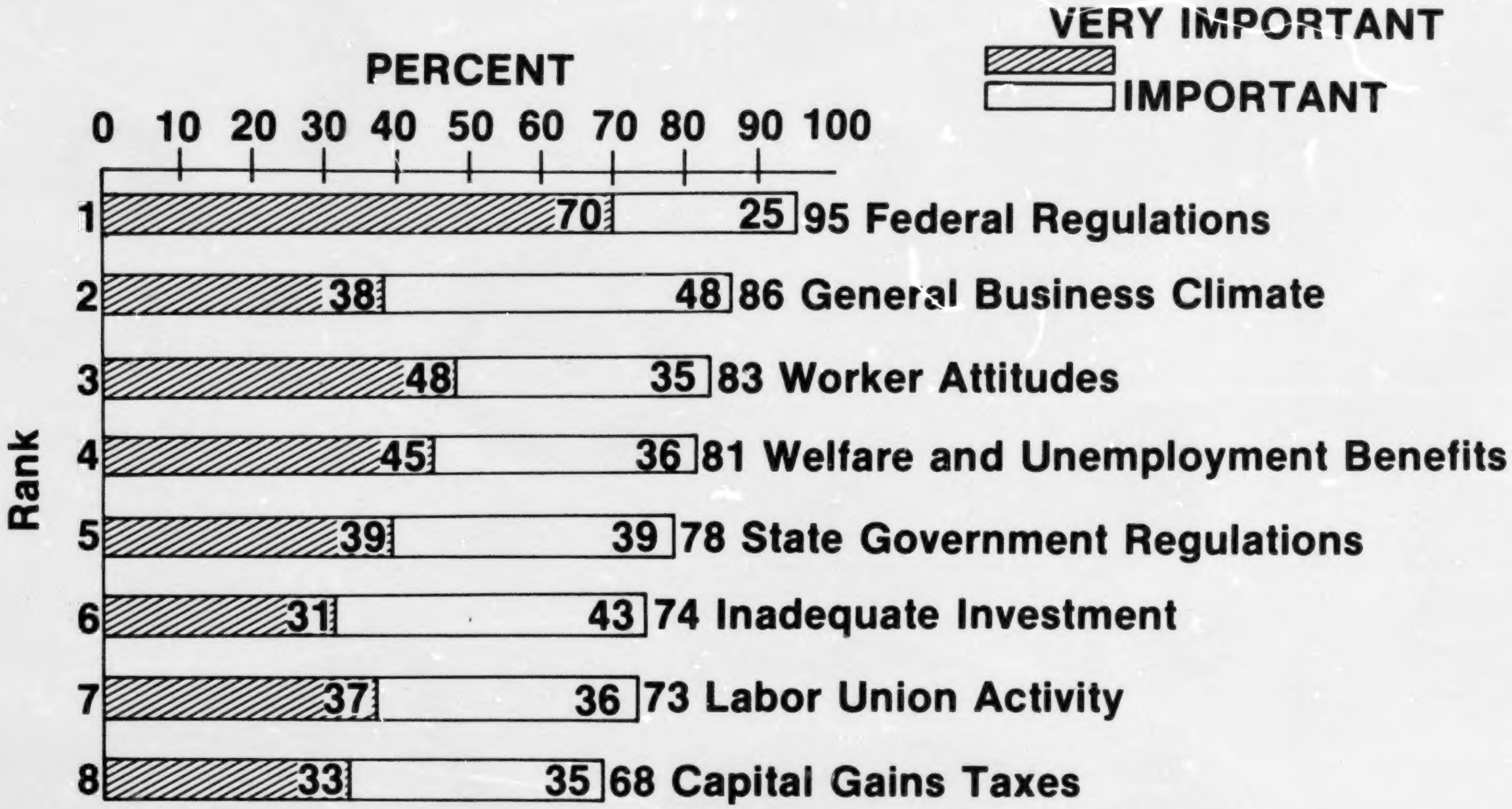


FIGURE 7

Source: Chamber-Gallup Survey of Business Confidence, August 1978

Productivity is perhaps best defined by enumerating what it is not: it is not speed-up. It is not profits. What it is, is a means to an end! Productivity really means more jobs, increased wages, improved profit for organizations, improved return on assets, and improved ability for an individual organization to compete in its sector of the economy, to compete nationally and internationally. It means an improved standard of living for American citizens, and it should also lead to an improved quality of work life.

For the first time in its twenty-year history, the Joint Economic Committee of Congress, in August of 1979, issued an unanimous report. It was signed by liberals and conservatives, Democrats and Republicans. The committee stated in that report and in its 1979 annual report, which was issued in January 1980, that "Productivity is the linchpin of economic progress in the next decade." The report went on to say that unless productivity in the United States improves in this decade, each and every one of us is going to suffer a decline in our standard of living. That decline is going to affect those at the lower end of the economic spectrum much more drastically, much more rapidly, than it is those of us who are more fortunate. I think that as a group of professionals concerned with the education of the work force in this country, the issue of productivity is something that you need to specifically address.

The Productivity Challenge

There are certain challenges that need to be considered in addressing productivity. The first of those is *political.* One of the reasons that there has not been a lot of activity is that specific attention to productivity has not been political in the United States. We as a nation have not answered the questions that are necessary about the behavioral and economic issues contributing to productivity's decline or improvement. So there are certain political changes that need to occur, and as a matter of fact, the whole concept of productivity has political overtones, even in the education business. If you are going to get involved in "improving productivity in education," you may find that it is very lonely out there. I do not think you are going to find a great deal of support just yet. It has not become good politics. I think that is going to change.

There is a challenge of *definition and measurement.* What is productivity? There is no universal definition of productivity. The definition of productivity, and how it is measured, is peculiar to the organization and to the functions being addressed. There is an elegant definition of productivity that says it is "output over input" (figure 8). The problem comes when trying to define output and input in a particular situation. Efforts at productivity improvement can be killed by continuing to persevere in attempts to define it. I would suggest that you take a certain amount of care in creating a definition. Try working with it, and if your definition does not actually describe what is taking place, then change it; but do not try to come up with an elegant definition.

I am particularly interested in the public sector. That is my primary area of responsibility. I can trace a history of documentation going back to about 1948 in the effort to define productivity in the public sector. What does it mean in local government? What does it mean in state government? There is no definition. As recently as last year, an article appeared in the *Journal of Public Administration* saying it cannot be defined. It has been defined. The definitions are not particularly elegant. Productivity has to do with how many tons of trash were collected per route mile. It has to do with number of shift hours in a police force per sector of patrol. It has to do with number of vehicle miles per shift. It has to do with number of water meters read per day. It has to do with number of students educated over a period of time. It has to do with the number of graduates who are placed in meaningful occupations by the end of three months or the end of six months.

FIGURE 8

$$\text{PRODUCTIVITY} = \frac{\text{OUTPUT}}{\text{INPUT}}$$

Productivity can be measured in the public sector. It can be measured in all sectors of the private sector as well. One of the reasons we have a problem defining and measuring productivity in organizations is due to the reluctance of people to submit to an examination of what they do. I contend that we could take any group that has similar functional responsibilities, let us say information services, and collectively we could define a reasonable set of measures for the information services group before the end of this afternoon. Not only could we define those measures, but if that group constituting information services would agree to be measured with those particular measures, we could begin to collect data starting tomorrow morning. I will leave it to you as to why those measures are not in place at the present time.

As I said, there is a fairly elegant definition for productivity. All you have to do is figure out the specific terms for the bottom and the top of the equation. I happen to prefer the following definition. It is much more meaningful for me, and perhaps it would be for you: "Getting more out of what you put in." Regardless of what it is that your organization consumes, improving productivity is achieving greater benefits from that process.

In terms of how an organization should approach the problem of productivity definition and productivity measurement, at minimum an organization must use the partial measures in figure 9 to assess its productivity. Focusing on any one of the factors to the exclusion of the others results in a distorted perspective on the productivity of the organizational entity, at any level, including the nation as a whole. For example, the United States, as indicated earlier, defines productivity at the national level strictly in terms of output per person-hour. That is a labor-partial measure; it does not take into account the contribution of capital, materials, or energy. Therefore, we have a distorted picture of productivity in the United States, and unfortunately it is distorted upward, because if you look at output of capital and energy in the United States, our productivity growth rate is even lower than that which I described earlier.

The weight that is given to each of these factors in figure 9 or to any other set of factors that describes an organization will vary considerably. For example, it would probably be inappropriate to try to assess the productivity of this organization in terms of output per amount of energy consumed because are not particularly an energy-intensive organization. I think that it is necessary to look at energy productivity in any organization, but I would suggest that the weighting for labor and capital be much higher in this organization than for energy. Similarly, I expect your materials consumption would be fairly low, except for print shop operations or something like that. The set of partial measures that describes an organization can be as small as the four I have indicated. It can also be quite extensive. In this respect I would use the example of United Airlines trying to assess the productivity of its operations throughout the United States. At the present time, there is no single number that describes the productivity of United Airlines because the management of the airline made the conscious decision that any single number would be inappropriate. They use a set of eighteen measures that describe various functional aspects of the organization. They collect data on those measures at each of their operating locations, and they directly compare the performance of aircraft utilization over time—for example, between Chicago and San Francisco. They compare the performance of ticket operations in Los Angeles to those in Chicago and San Francisco, but they do not try to compare ticket operations to aircraft utilization. There is no reason to do so. It would not mean anything. In the case of United Airlines, or a similarly diverse operation, there may be as many as eighteen or twenty measurements to describe the organization and provide an accurate picture to management of the operating effectiveness and efficiency of the various operations. Such a system allows them to make the kinds of trade-offs that are necessary to run a complex organization.

In some cases, if all of these partials are converted to a common language (the only one we have been able to discover is dollars), they can be pulled together into a single composite measure. They

PRODUCTIVITY IS

$$\frac{\text{OUTPUT}}{\text{LABOR}} \qquad \frac{\text{OUTPUT}}{\text{CAPITAL}}$$

$$\boxed{\frac{\text{OUTPUT}}{\text{INPUT}}}$$

$$\frac{\text{OUTPUT}}{\text{MATERIALS}} \qquad \frac{\text{OUTPUT}}{\text{ENERGY}}$$

FIGURE 9

can be aggregated into something called by Dr. John Kendrick, an economist at George Washington University, "total-factor productivity." I refer to it as "multifactor productivity," because there is always an unexplained residual at the tail end. This particular measurement structure is one that Dr. Kendrick has championed for forty years, but it is one that the American economy has refused to accept. Dr. Kendrick, who we are fortunate to have on the board of directors of our organization, has recently completed a study in which he has plotted the total-factor productivity for the United States since the end of World War II. Those data do nothing to make me happy. They reinforce part of the statement I made earlier today about the gloomy situation we find ourselves in as a nation.

The *third challenge* is one of planning. We do not plan for productivity at the national level or at the organizational level. Productivity is not typically a goal that an organization strives to achieve. This is a mistake. It needs to become a conscious goal that we strive for, for instance, to increase productivity by 3 percent or 5 percent this year; to increase productivity in operation X by such and such a percentage. People and organizations are goal-directed entities to the extent that if they know what the goals are, they can try to achieve them. We have failed to do that. We have failed to address ourselves to productivity as a part of our national planning, or to organizational planning in general.

The last and perhaps most important challenge facing productivity is *behavioral.* How do you answer the basic question that I am sure several people have already asked themselves. That question is—"What is in it for me? Why should I become more productive? What gains accrue to me as an individual, as a wage earner?" Unless an organization, unless a nation, can begin to answer that question, then productivity is not going to improve. The particular motivation techniques, the particular ways in which a commitment to improving productivity are developed, are, again, peculiar to the organization [illegible]s function, and the composition of its work force. One of the factors that influences the selection of a particular approach has to do with the value systems of the employees. Establishing productivity as a goal in the value systems of individuals requires that they internalize the notion that productivity improvement is part of the reason they are working. This requires changing the training and education of the work force, both the entry level work force, and those with experience, to emphasize that they should be doing as productive a job as possible. They should be getting more out of whatever they put into a job. I do not think we do that very well.

Most economic theorists would concur that improvement in the economic well-being of a country or any other organizational entity is keyed to the growth of productivity in that organization. Public opinion polls that have been conducted over the last several years show, on the other hand, that the majority of the work force in the United States thinks that the benefits that accrue from improving productivity go to the stockholders and the management in private sector organizations and do not mean benefits to individual employees. We need to resolve this misunderstanding. Part of the dilemma is related to people's attitudes toward their work, which have declined over the years. People believe that work is not as satisfying as it once was, that the environment in which they work is not as good as it could be, and that their chances for promotion are not as good as they could be. The only attitudes that have changed positively over the period covered by these surveys are attitudes toward coworkers, and employees' ability to work together. That says to me that we have failed, in managing and operating organizations, to relate effectively to our work force. Employees do not perceive that they benefit from improved productivity. I would contend that their perception is incorrect, but that is what they believe. Therefore, it is up to us as managers, it is up to us as educators, to show employees that they have an erroneous perception. We must demonstrate conclusively to them that their perception is wrong, and get them to adopt the definition that I gave you earlier: productivity is getting more out of what you put in.

An Approach to Productivity Improvement

How do you cause productivity to improve? Nobody that I know has any magic answer to that question. What we do know is that there is a variety of tools and techniques which, when applied properly and matched to the requirements of specific organizations, has resulted in improved productivity. I can talk to you in detail about what has happened in the Exxon Corporation, Boise Cascade, Coors Container Company, and Donally Mirror Company regarding the improvements that have occurred in productivity when particular tools have been applied. Will those tools work in the organizations of which you are aware? Will they work here? I do not know. That decision needs to be made on a local basis. What I think researchers such as yourselves need to do is to become more aware of the productivity improvement tools that are available, how they might apply within this organization specifically, and how some of those tools might be translated into practices in vocational education.

Let us talk about where productivity improvement comes from. There was a study done by Edward Denison of the Brookings Institution in 1974 (Denison 1974). He studied the historical sources of productivity and growth in the United States economy from the end of World War II through about 1970. The largest percentage, about 48 percent, is attributable to technological innovation. Increases in the average level of education account for about 12 percent. Better utilization of resources, including better utilization of human resources, accounts for another 12 percent. Economies of scale account for 16 percent. The application of capital accounts for about 16 percent. That study has been subjected to a certain amount of criticism, as underestimating the impact of education. I would submit that this is probably true, because it did not take into account the contributions of education in the generation of the technological innovations that make up the largest percentage section. I am not sure that we can assess that. The point I make when I talk to industry audiences and public sector audiences about those historical sources of productivity improvement is that in a typical organization, the lead time for selecting and putting into place a technological improvement is fairly substantial. In a private company it is often a year. In the federal government any substantial technological innovation, such as a new truck, takes three years, computers take seven, and new buildings take nine. Before the benefits of technological innovations in an organization can be realized, the present technology must be tolerated and used productively for quite a while. An available resource, and one that can and needs to be tapped quickly, is the human resource, human assets within the organization. Employees' education and effective application of learning combine to form approximately 24 percent of the available sources of productivity improvement, and they can be tapped as quickly as this afternoon. One of the most important actions that any organization can take to improve its productivity is to urge its employees, and by employees I mean everybody from the janitor to the chairperson of the board, to become involved in the process of productivity improvement. This works very well. The results have been substantial and are well documented. It is part of the responsibility of an organization such as the National Center for Research in Vocational Education to tap into that potential.

Improvement of productivity in any organization requires a structured productivity program. I would like to share the one favored by the Center with you. This program has ten elements. The weight given to each of these factors will differ significantly from organization to organization, but a successful program has at least these ten elements:

1. Awareness and acceptance
2. Organization
3. Goals
4. Resource Effectiveness
5. Employee Involvement

6. Incentives and Gain Sharing
7. Rewards and Recognition
8. Training
9. Measurement
10. Leadership

The first element is *awareness* that productivity needs to be improved, needs to be accepted, by all levels in the organization, particularly top management. They need to recognize the problem and be ready to deal with it. The particular approach to improvement selected by the organization must be keyed to the *structure* and the *goals* of the organization. It must be part of the way business is done on a daily basis; to the extent that this is not done, the program will fail.

It must be keyed to using the *resources* that the organization has available, whether these resources are people, capital, or energy. The approach should maximize the potential of the resources that the organization uses. It should *involve the employees* from the beginning of the productivity improvement process. It should not delegate the responsibility for the decisions to the employees, but it should involve them in the planning. The approach should deliberately have employees participate in making decisions about their economic well-being, the way they do their work, and the kinds of work they do. This includes the involvement of labor organizations as well as individual employees. There should be a structure, a way of answering the question of "What is in it for me?" There must be some *incentives* for being more productive. There should be a mechanism for sharing the gains that accrue to the organization for more productive behavior. If you cannot answer the question, "What is in it for me?", at the beginning of a program you may get some cooperation anyway, just because the effort is new and different. Six months later, if your people still cannot answer the question, "Why have I been doing this? What is in it for me?", productivity may quickly revert to what it was. There needs to be a structure for *rewarding and recognizing* the efforts of people in the organization. There needs to be a structure for providing the kinds of feedback that we all vitally need: whether we are doing a good job, a bad job, or no job at all. The particular approach for productivity improvement needs to become integrated into the *training* systems that support the organization. Productivity needs to be a conscious part of that training. People need to have explained to them what constitutes productive and nonproductive behavior, in terms of their own jobs.

Management, itself, needs to know what productive behavior is for its jobs. One of the most serious deficiencies in productivity improvement in industry is with supervision. High technical qualification in a supervisor does not necessarily make a good supervisor. That management appointment approach has historically failed, but we continue to use it. These people are often not equipped with the tools they need for their new responsibilities. Nobody has ever explained to them what productive supervisory behavior is, as opposed to productive technical behavior.

There needs to be a *measurement* structure. If we do not know where we are, if we do not know where we have been, we will never find out where we are going! There is a basic communications model that says there has to be feedback for true communication to exist. The organization needs to be able to know where it has been, where it is going, whether it has done well, or whether it has done poorly. There also needs to be *leadership* to install the program and to keep the program going once it is installed.

Let me present some empirical data to support this program model. Some of these elements are more strongly supported than others, but it is a combination of these ten elements that we have found in place in organizations that are productive. I have enough data that say that those ten elements, at a minimum, must occur, because when those elements are missing, the programs fail.

QUESTIONS AND ANSWERS

Question: What has business' contribution been to the decline in productivity as opposed to government's?

Business is responsible for the decline in productivity. There is absolutely no doubt about that. It is the action agent, if you will, that causes productivity to improve or not to improve. There is a failure on the part of business management and business organizations as opposed to workers' groups, for example, to cause the kinds of structural changes in their organizations, the kinds of behavior modifications, that would lead to improved productivity. There is absolutely no doubt about it. The list of factors contributing to the decline in productivity in this nation that I gave you was not intended to be exhaustive. It was intended to be illustrative. I indicated that I had reservations about the contribution of each of those factors. Poor management in organizations is probably the major contributing factor to the lack of productivity. I would not argue that for a moment. The argument has been advanced on occasion that productivity and management are synonymous. I would argue that good management and productive behavior are synonymous, and unfortunately, there is a dearth of good management in this country and in other countries.

Question: Do you have any observations on what accounts for the decline in productivity due to the lack of good management?

There are specific examples I might draw your attention to that indicate the kinds of deficiencies we find (Hayes and Abernathy 1980). In the public transit field, for example, historically there was not enough hiring, in the late fifties and early sixties, of college graduates into management positions in public transit organizations throughout the United States. That has translated today into a lack of a professional managers pool in the public transit business. That is correlated with the poor performance of public transit organizations—railroads, busses, and the like—throughout this country. You will find in most transit organizations that the people in senior management positions are well along in years, and have been in the transit business for many years. Mid-level management positions are typically filled by people who have two or three years of experience in the transit business. In this instance, there was a lack of recognition of the need for succession fifteen to twenty years ago, and a failure to bring people into the business.

In the construction industry, in the building of large power plants, for example, statistics show that average workers put about three out of eight hours per day into work where they have their hands on their tools. The second largest chunk of their day, almost 30 percent of the time, is spent standing around waiting for materials or supervision (Bahrke 1980). That is not the workers' fault, that is poor planning, that is poor supervision. We have failed to train those construction managers in planning, work flow, and other factors relative to work output. We have failed to give them sufficient information to get materials in place in time, and we have forgotten to train first-line supervisors on how to handle workers to make sure that they put them on the job. I could go on and on with more stories of the kinds of deficiencies that exist. Are they conscious deficiencies? Were they deliberate? No, I do not think so, but they exist and steps need to be taken to cure them.

Question: Would you modify this presentation if you were addressing a different kind of audience, such as union workers?

I have had absolutely no problem in making this same presentation to members of the United Mine Workers, to hourly employees in shipyards, to garbage collectors, and to dog catchers. Did they always agree with what I say? No, but do I bend my message to fit the audience? Absolutely not!

Question: In a nonformal labor/management situation, such as that represented by a school district, what can be done to reduce nonproductive labor/management relations, for example, between school administration and teachers?

The responsibility would have to lie with both sides. It would have to come from a recognition by "management," and I am not sure where that dividing line is between management in education or research, and the people who constitute "labor."

On the employees' side, there has to be an assumption of responsibility for the quality and quantity of work and a willingness to assume responsibility for how that work is accomplished. On the management side, there has to be a recognition that the employee is probably the expert with respect to that job, whatever it is. I would contend that somebody who has put in fifteen years in a classroom or fifteen years as a welder knows more about that particular job than the principal or the supervisor. That expertise needs to be recognized and solicited. My boss, Dr. Grayson, makes the observation that the cheapest set of consultants any organization can hire is already on the payroll. That is, if you can tap the pool of resources already existing in your organization, you will be that much further ahead.

There is a set of work improvement and productivity improvement techniques that deal with employee involvement. These techniques call for the conscious delegation of responsibility for the work that is done and the quality of that work to the lowest possible level. They also delegate to the lowest possible level the responsibility for suggesting (notice the word suggesting) and recommending changes in procedures, processes, and tools. None of those techniques removes the responsibility from management to make necessary decisions, but they actively recruit and pass the responsibility for the generation of those suggestions, those changes, to the people who do the work. I would suggest that, to the extent that this kind of a model can be put into place in the situation you are talking about, the us/them relationship could change.

Question: What is your definition of experience?

The operational definition of experience to which I am referring, the one that I use, is time on the job, that particular job. Recognizing that an individual can make the same mistake one hundred times, the studies that I am aware of regarding the best predictors of competency on a job, the best predictors of safety on a job, have to do with time performing that function—with time in that job. For example, if you look at the accident statistics in the mining industry, the best predictor of whether or not an accident will happen is not just experience, but experience in a particular situation. Time in the mine has absolutely no relevance. The individual could have twenty years in the mining industry; whether or not an accident will occur has more to do with how long that worker has been running that particular piece of equipment. That is the operational definition of experience that I use.

Question: Would you expand that definition with respect to your comment that less experienced persons are entering the work force?

I think the same definition is reasonable in that particular situation. People have been coming into the work force and assuming new functional responsibilities that they had not had before. I do not care if an individual is eighteen, straight out of high school, or forty-four, coming from a homemaker's position into a factory position or a technical position; the individual has not fulfilled that function before. Therefore, that person is less experienced than some individual who has been in that position for four years. That is the way in which I was using the term experience.

Question: During the time period over which productivity has declined, was there a conscious decision by management to utilize labor because of its lower cost—lower cost being associated with the influx of less experienced people into the work force—than to rely on capital expenditures or more productive technology?

Although less experienced people are, in fact, less expensive to use, I am not sure that the reduction in capital investment tracks exactly with the influx of that cheaper labor. The causes underlying management's reluctance to use, or to acquire for use, capital in the large amount that is necessary to effect improvements in an organization's productivity have probably been due less to the availability of "cheaper" labor than they have been to the operation of the following factors:

- Fear—of what the future will bring in terms of market conditions, economic policies, interest rates, and other factors
- Uncertainty—with regard to the correctness of a proposed course of action in light of all the factors listed previously
- Doubt—with regard to the company's position, the mvoes of the competition, and any new federal regulations

Contrary to conventional wisdom, the introduction of capital-financed productivity improvements in technology, tools, or physical plants does not reduce employment. Productivity in this country has improved five-fold in the past century, and employment, both numerically and percentagewise, has improved as well. The productivity of the Japanese auto industry is frequently cited as one of the reasons for Detroit's current problems. What is not acknowledged is that the significant improvements in the productivity of Japan's auto industry have been accomplished by a 50 percent increase in employment.

Question: American agriculture is thought of as being the most productive in the world. Is there any positive transfer that can be made from agriculture to other sectors of the economy?

Let me puncture a hole in your balloon. Productivity in agriculture in the United States is not as high as we have been led to believe. Relative to other segments of the economy, the agricultural industry ranks about seventh or eighth in terms of productivity. We are, in terms of production, not productivity but production, the most productive agricultural nation in the world. There is absolutely no doubt about that. However, in terms of productivity per unit of ground, or productivity of capital in agriculture, we rank fairly far down on the list in terms of countries such as Japan and some of the more developed nations of Europe who produce considerably more per acre of ground than we do. United States' productivity in agriculture increased about twice as fast as productivity in nonfarm sectors of the economy in the first sixty years of this century. Since that time, it has declined at a rate parallel to that of the economy as a whole. Our productivity or production in agriculture comes at the cost of tremendous infusions of energy and capital. I think that we have a long way to go in agriculture with respect to improving productivity, even though the industry is healthy. I am not exactly adverse to the idea of taking some people from that industry and transferring them into some of the more poorly managed industries that we have.

Question: When an industry decides to measure gross productivity of its efforts, how does quality enter into the equation?

When you talk about gross statistical measurements of an industry, you must make the assumption that quality is equal. Now, I recognize that is an erroneous assumption when you are talking in gross numbers about the performance of nations. Is the standard of living in the United States the same as in Japan, or the same as it is in France? Are we willing to trade that standard of living for better productivity? That is an individual decision. We make the assumption, when we talk at the global level, that quality is equal, and that is a measurement error, if you will. When you are talking about an individual organization, you must measure quality at the same time as you measure quantity of output. If you do not have a quality measure, then you are misleading yourself. The question of what constitutes "quality" in education, and measures thereof, is one that has vexed education for decades, and is more properly the domain of educational professionals rather than me. In the area of vocational education, however, I would be willing to venture that the competition to hire graduates of a program would be a measure of the quality of that program. To be sure, that is a subjective measure, but it is one that reflects a value-added approach, which is important.

Question: How do you measure productivity in an organization that is composed of people who work primarily with information—people who are, for want of a better term, knowledge workers, professional and technical people who produce a product over which they have no direct control in terms of application of that product, or in terms of profit and loss associated with that organization?

In direct terms, I expect that there would be some exception taken to the point of profit or loss for an organization working primarily with information. If nothing else, you would be trying to operate at zero profit, but certainly not at a negative profit or a loss. You would in fact have deadlines. You would in fact have deliverable products. Input and output can be measured in professional organizations, and they can be tied together very directly. Performance of this sort can be assessed. The question of whether it *needs* to be measured is another point entirely. It may be that the measurement of performance in an individual work group can be subsumed under a larger measure of performance, and that is the appropriate level at which to measure performance in an organization.

I do not feel that it is necessary for an organization to measure the productivity of an individual. The management of any entity needs at least two sets of measures for two sets of reasons. It needs to know about the performance of individuals to decide whether to retain them, to dismiss them, to give them a raise, or to transfer them. That is one set of assessments that is used. Management also needs to know about the productivity of the organization itself and its major components. That can be measured in tangible dollars-and-cents terms. In terms of productivity measures for the organization, trade-offs about resource allocation can be made. It is a separate set of measurements, used for a separate set of reasons.

113

Question: What specific research and development activities should be engaged in that will have an impact on policymakers (i.e., the Congress), that will result in vocational education contributing to an increase in productivity across the nation?

It is not the lack of R&D activity that has prevented us from having an impact on policymakers, it is the lack of R&D results, expressed in meaningful terms, that has prevented that impact from occurring. Educational R&D (like that in a number of other fields) has not led to successful policies or programs. Instead, it has often been planned and implemented in isolation from the decision-making process, and has produced little information of interest and utility to policymakers. R&D activities are sometimes designed to build professional reputations, advance careers, or maintain institutional visibility, rather than to address the hard questions.

Research and development activities that will have an impact on policymakers (whether in Congress or at other levels in the federal and state governments) would be extremely difficult to pinpoint with real accuracy. However, I think it would be reasonable to state that, given the present concern for productivity and the interest in helping our various industries become more productive, any R&D results that can demonstrate a strong link between educational expenditures and the productivity of a group (e.g., graduates of the xyz program hold more jobs and earn higher pay than nongraduates), an organization (e.g., graduates of this program that have been palced with company A have demonstrated better attendance, higher achievement of bonuses, and more promotions than individuals who did not have this training), or an industry (a longitudinal study of the industry indicates that the vocational program has produced the following results) would be of substantial interest at the policymaking level.

Question: How can productivity be improved in local and state vocational education programs?

This question is somewhat difficult to answer from two standpoints: the first is that I am not an expert in vocational education; the second is that it would be naive and pretentious for met to attempt to prescribe for the needs of this nation's entire vocational education program. However, I think that there is something that can be learned from the productivity-related research and experience that has been garnered from other sectors of our economy.

First, let us examine the tangible results that have been achieved by organizations that have directly addressed their own productivity. These results have included the following:

- Reduced production costs with increased pay rates
- Improved output per employee over time
- Substantial reductions in overhead costs
- Reduced labor costs
- Improved quality/quantity of service
- Reduced absenteeism
- Reduced numbers of grievances
- Reduced employee turnover

To the extent that state and local vocational education programs are able to produce individuals who can join organizations and contribute to the achievement of these kinds of results, I would have to say that these programs are successful.

How do we make that happen? Again, I think that there are some lessons to be learned from the work on productivity that has been accomplished to date. I would make the following points:

- The pace of technical progress in any industry stems largely from the degree of effective diffusion of the best practices—the most productive practices. The existing variations in levels of productivity between individual organizations/plants in any industry or geographical area are due in some part to the lack of diffusion of best practices between organizations/plants. To the extent that vocational education programs contribute to the effective diffusion of "best" practices, to the extent that they provide people with the skills that contribute to the adaption of new techniques/technologies, then they can be considered productive.
- The effect on jobs of productivity boosting technology interacts with geographical shifts in production. This has happened before in this country, and it will continue to happen. An expanding industry can absorb the kinds of technical change that lead to fewer jobs per unit of output without shedding workers. In that situation, the emphasis of the vocational education programs needs to focus on preparing people to assume varied job responsibilities, to be flexible. But if the industry is one that is squeezed by the arrival of new producers, technological change often erodes employment. Vocational education's role then becomes one of helping to accommodate those technological changes and to prepare individuals for tomorrow's growth industries.

Question: Federal legislation mandates that each state evaluate local vocational education programs every five years. The two measures, stated by federal legislation, on which programs must be evaluated are placement in jobs related to training and employer satisfaction. Would you suggest other factors that would measure the productivity of these programs and specify how research could facilitate this measurement?

As with the performance of any organization/program, the examination of the productivity of vocational education programs would require looking at both efficiency and effectiveness. Efficiency —"doing things right"—and effectiveness—"doing the right thing"—can both be examined, but they must be examined in terms of proxies or surrogates for the real outcomes of a vocational education program.

The ultimate aim of any vocational program is to improve the well-being of those who have been involved in the program. While a laudable aim, it is not something that can be accurately assessed. Thus, we are limited to examining surrogates for that well-being. As I stated in my presentation, productivity is defined as output/input; I went further and said that a "set" or "family" of measures is often needed to adequately describe the performance of an organization. The same is true of a vocational education program.

I would say that, as a minimum, any vocational education effort should be assessed in terms of the following:

- Operational efficiency
- Program efficiency
- Operational cost effectiveness
- Program cost effectiveness

The efficiency measures would be indications of the productivity of the internal operations of the program. The effectiveness measures would measure the degree to which the program was succeeding in meeting preestablished goals, and the costs of achieving those goals.

Question: Would you describe the productivity tools you mentioned in your presentation that researchers should learn about for potential application in vocational education?

The "productivity tools" that I made reference to fall into two categories: the first of these is with respect to, what I detected to be, a certain amount of concern for productivity improvement here in this organization, or in the organizations from which people in the audience come; the second category was with respect to the application of information about productivity and productivity improvement in the context of vocational education and vocational education research.

With respect to the first category—productivity improvement in this organization or other organizations that employ professionals of the calibre that are developed here—productivity improvement in such organizations is complicated by the difficulty associated with the development of useful measures of productivity. That is not to say that measures cannot be developed, just that it is more difficult to do so than it would be for a manufacturing organization. The measurement tools, the assessment tools, and the tools and techniques that could be used to increase productivity all exist. What appears to be lacking is the motivation and the leadership to examine critically what it is we do as researchers and as professionals, and to ask the important questions about the value and productivity of those efforts.

In the second area—the productivity of vocational education and vocational education research's contribution to that productivity—I think that it is a matter of not having rigorously examined the impact of our efforts. The cause and effect relationships between existing vocational education programs and the productivity (or lack of it) of their graduates have not been explicitly examined. Perhaps it is my lack of familiarity with the field, but I am not aware of any series of studies that can empirically demonstrate an improvement in individual, organizational, or industry productivity as a result of the existence of a particular vocational education program.

The evidence would seem to indicate that, despite the large increases in expenditures for education and the increased numbers of relatively educated workers (e.g., those with high school degrees and some exposure to higher education), productivity at the national level, and in most sectors of our economy, continues to decline. While either side of this argument could be debated with equal fervor, I think you would agree that there is a disappointing lack of information regarding the effectiveness and efficiency of vocational education programs. Again, I do not believe that the reason for this is the lack of tools. Evaluation techniques and research methods are an integral part of the training each of you is receiving. What appears to be missing is the commitment, the incentive, to critically examine and document our failures and our successes.

REFERENCES

Bahrke, W. H. "Presentation to the Building Research Advisory Board's 1979 Building Future Forum." In *A National Strategy for Improving Productivity in Building and Construction.* Washington, DC: National Academy of Sciences, 1980.

Denison, Edward F. *Accounting for United States Economic Growth, 1929-1969.* Washington, DC: Brookings Institution, 1974.

Hayes, R. H., and Abernathy, W. J. "Managing Our Way to Economic Decline." *The Harvard Business Review.* July-August, 1980: 67-77.

FOR FURTHER READING

Chinloy, P. "Sources of Quality Change in Labor Input." *American Economic Review* 70, No. 1 (March 1980): 108-119.

Denison, Edward. "Some Factors Influencing Future Productivity Growth." In *The Future of Productivity.* Washington, DC: National Center for Productivity and Quality of Working Life, 1977.

Etzioni, Amatai. "Work in the American Future: Reindustrialization or Quality of Life." In *Work in America, the Decade Ahead.* Work in America Institute Series. Edited by Clark Kerr and Jerome M. Rosaw. New York: Van Nostrand and Reinhold, 1979.

Gallop, F.M., and Jorgenson, D.W. "U.S. Productivity Growth By Industry, 1947-1973." In *New Developments in Productivity Measurement and Analysis.* Edited by J. W. Kendrick and B. Vocarra. Chicago: University of Chicago, 1980.

Kunze, Kent. "Evaluation and Work Force Composition Adjustment." In *Measurement and Interpretation of Productivity.* Washington, DC: National Research Council, National Academy of Sciences, 1979.

Mork, Jerome A. "Productivity Trends and Prospects." In *Work in America, the Decade Ahead.* Work in America Institute Series. Edited by Clark Kerr and Jerome M. Rosaw. New York: Van Nostrand and Reinhold, 1979.

National Research Council. *Measurement and Interpretation of Productivity.* Washington, DC: National Academy of Science, Office of Publications, 1979.

Rosaw, Jerome M. "Quality-of-Work-Life Issues for the 1980s." In *Work in America, the Decade Ahead.* Work in America Institute Series. Edited by Clark Kerr and Jerome M. Rosaw. New York: Van Nostrand and Reinhold, 1979.

Yonkelovich, Daniel. "Work, Values, and the New Breed." In *Work in America, the Decade Ahead.* Work in America Institute Series. Edited by Clark Kerr and Jerome M. Rosaw. New York: Van Nostrand and Reinhold, 1979.

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